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The January Number of . . .

The Australian Gardener

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Flower Garden.

Summer Treatment of Roses

Roses are now doing good growth again, the young red shoots running riot, just as they did in early spring. Keep the bushes well mulched with manure, or, if you have no manure for the purpose, break up the earth around the stem once a week. This will act as a mulch and help you greatly in the work of managing the roses Too much watering is not necessary. One good soaking is worth twenty sprinklings. Many folk seem to think that roses need a rest in the middle of the summer. That is not so. Properly manured and well watered, the bushes will keep flowering all the summer through,

A rest in roses can only be brought about by withholding water and manure.

If you are growing roses with a view of selling blooms, a lot of attention is necessary. Force the bushes now for the crop of flowers that are showing and when the flowers are over cut back again to a good strong eye. Do this after every crop of flowers. Roses delight in a cheerful pruner. The man or woman who only cuts an inch where they might cut half a yard, do the bushes more injury than good. Some day rose growers will recognise this. Until they do, there is no great gain, and not much pleasure in the rose garden.

Climbing roses are just now throwing out a lot of new growths. Leave these alone. Anyone who tells you to cut them out tells you to do a wrong. The new, vigorous growths which the climbers are now making are the flowering shoots of next spring. Understand that a climbing rose flowers differently from the ordinary bush sorts. The low growers flower on the new wood. This you can prove by a turn in your garden. The aim of all roses is to produce a bloom. This they do as soon as the growth is well enough on to carry the flower. Not so with the climber. These varieties throw out long shoots now and send their blooms next spring. Here and there you do get flowers off the end of a new shoot: but generally speaking, the blossoms only follow the ripening of the wood,

To help the climbers, prune away all the weak wood and all the dead wood. This only hampers the new shoot by taking a little of the rose sap, which should be going into the young rose life. The only way to get at the bottom the many interests which grow around the roses is to watch with eyes that are wide open. You will see more of the ways of rose life in a few weeks of watching than we can cram into you in a year. Eyes and ears are only given us for use, Now don't forget that roses only do well where they are well cared for.

Dahlias and how to save Dahlia Seed.

Dahlias will need a lot of attention now that they are growing freely. Keep them well mulched with old litter and manure, and water the plants often. Some of the finest dahlias we have seen growing were watered freely, each receiving about a full bucket once a day. That was in a sandy-soil garden. where the water soaks away very quickly. Quite half, or more than half, of the water would run to waste. For a heavy soil situation a lot less water would be required. Every three days will do nicely. All the pieces that are cut or broken off the plants should be thrown around the base to act as a mulch. Light dressings of weak liquid manure will help the flowers on once the buds have begun to show their size. When the blooms are beginning to break knock the liquid off a little.

When growing dahlias for show purposes take out all the weak growths that are running in towards the centre of the plants where they get no chance of doing any good.

Only the blooms that get sunlight and air do their best. Don't be a bit afraid of cutting the flowers on a long stem. The plants make quick growth until late in the autumn. so it does not matter if you do cut a shoot out here and there. There is one thing you must on no account neglect—to tie the plants up to save them breaking before the wind. Dahlias are so brittle that they go over easily. Use hardwood stakes and let each shoot have a stake to itself. Be careful and not try to bunch the plants too much This plan will break many a limb.

There is another item in dahlia cultivation which you can get ready to try—the raising of a little seed. This is a fairly simple operation, and a very interesting one. Even though one knows that fully 90 per cent. of the seedlings will be of no value, there is a lot of pleasure to be had in tending and blooming a batch of uncertainties. If one could make a success of everything that one handled, life would be all too easy; it is the lot of failure and the little bit of success which makes the pleasure of plant raising so great. Ten losses make one gain all the greater.

Begin your seed raising by selecting two flowers that are somewhat similar in form, a little alike in colour, See that both are good growers, and be particular to only cross varieties that hold their flowers well up, instead of dropping them face downwards. Only the strong sorts are worthy of being propagated

The time to do the crossing is when the flowers are opening themselves right out. showing the yellow "button' or centre which the show growers despise. It is on the small stamens in the yellow part that one finds the pollen which fertilises the flower, and makes the seed sure. Care and attention are necessary in this matter. First it is essential that no bee or insect of any sort should be allowed to make its way into the heart of the flower you have selected as a seed parent. To ensure this you must tie the flowers up in a fine muslin bag. Do this lightly, and be careful not to break the stem of the bloom. The flowers you select as pollen bearers (the pollen bearer is the one you wish to use as a male flower : dahlias, you know have the power of fertilising their own seeds) you must cut from the plants when they are just about half open and before the centre is showing. Take these and run their stalks into long necked bottles, and place the bottles in a bucket about three parts filled with water. Cover it with a piece of the same muslin and let the flowers remain in a cool room or shed until they have opened their hearts enough to exhibit and ripen their pollen. Take the pollen grains from the centre of the plant on a camel's hair brush, and then dust it lightly on the yellow centre of the flower you have been saving on the bush. A nice, dry still morning is the ideal time for this hybridising. If you are not certain of the brush work, you might dust one flower over the top of the other and in this way get much the same result. Cover the flower up again with the muslin and allow it to die right down.

Should damp weather ensue, see that the petals are not left on long enough to get mildewed or rotten. Cut them off when they are dead or pull them out very carefully. The seeds are ripe when the ovaries are yellow in colour. Great care must be exercised in your store seed that is damp—dry everything before you store it and make a note of the crosses to see how the influence of the parents is felt on the progeny,

Should you not care to go to all this trouble let some of the flowers seed of their own sweet will, and collect the seed when it is ripe and ready.

Dahlia seeds should not be sown until early in Spring.

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Cinerarias.

The following article preaches Cinerarias from our own text. Time and again we have advised friends to grow cinerarias for outdoor work. The only alteration is in the matter of the month for sowing the seed. It should be January instead of December, and then the article suits almost every situation on the Eastern coast.

Some years ago the Cineraria was not considered a plant suitable for outdoor culture, and consequently it was only found decorating the shade or the glasshouse. But this is altered and its usefulness for the open border fully realised. This season owing to the moist and dull character of the weather, they have been especially good both in the individual pip and the immense heads. There are not many plants that make such a grand show as the Cineraria either in the glasshouse or in an outside bed, and as its culture is easy there is little doubt that it is fated to become even a greater favorite than it is now.

Position of Bed—The Cineraria delights in shade and it abhors the direct rays of the sun. It is, therefore, of the utmost importance that the position of the bed to contain them should be such that it gets as little as possible of direct light. The south side of a wall, or hedge, or fence is best, but if that be out of the question then an eastern aspect must do.

Soil—Now the Cineraria likes a nice rich, deep and loose loam, and although it is not always possible to give them what they want you must do your best to get as near it as possible.

Firstly, dig the soil of the selected bed as deeply as you possibly can with a fork and break up the lumps of earth as small as possible so as to have it almost as fine as potting soil. Then spread over the bed a good thick layer of very rotten cow dung. If one is going to grow these plants to perfection, one must get this cow manure in some months beforehand and keep it on purpose for the Cineraria bed, for I haye always noticed that the manure man can never supply a load of old rotted when it is wanted, but usually turns up with it three or four days after the bed is planted, too late. Dig the manure in and stir it with the soil so as to have it evenly distributed throughout. This object is best effected by digging the bed two or three times before planting time comes. There can be little doubt that this very thorough preparation of the soil has a great deal to do with the ultimate success of the bed, and if it is neglected or only attended to in a half-hearted manner no very striking results are likely to be secured, nor can they be expected

....

Propagation.

Now as to the raising of the plants.

Cineraria are raised by seed and by cuttings, but most often by seed, which is no doubt the easier method.

Just here let me impress on intending growers that the month of December is absolutely the best for raising seed for plants to flower in the open border, for this reason that they come into bloom in the dull, shady days of late winter and early spring, and they delight in such weather. Seed put in later will most likely have its blooming period cut short by the too bright rays of the sun.

The seed is one of the easiest to raise if it be fresh, and the veriest novice will find it much cheaper to buy a packet of good seed, which will cost him half a crown, than to buy the seedlings from a nurseryman. In the first case he will have enough to enable him to keep a reserve fund, from which he may draw should slugs, snails, frost or cats make it necessary.

For raising the seed I make up my soil of half sand and half soil taken from under the branches of some old tree. This I run through a sieve with a very small mesh, say one-eighth of an inch, and mix it with the sand.

Use a seed pan for sowing the seed in, it is handiest and the cost of a suitable one is something under a shilling. Cover the holes in the bottom with some broken pieces of pot, and then fill in for an inch deep or so drainage made of broken potsherds no larger than a Yorkshire Hero pea, and on this fill in the prepared soil to within half an inch of the rim. Level off the top, and with a fine rose-seed can give it a soaking, so that you may see the water running through the drainage holes at the bottom. It is too damp to sow in this state, and must be allowed to stand an hour at least to drain. At the end of that time the seed may be sprinkled over the surface, taking care to do it as thinly and evenly as possible. The seed must be covered very lightly either with some fine sandy soil or some sifted manure. I generally use the latter as being lighter and tending to keep the soil damp.

Never sow the whole of the packet at one sowing, but reserve a portion of it for a second sowing a week or so later, in case the first misses fire. Cover the pan with a pane of glass, and set it in a shady place where light is plentiful, but out of the sun's direct rays.

Good fresh seed should be showing up in a week's time and all of it should be up under a fortnight. Still keep the pan in the shade. but remove the pane of glass. See that the seedlings are watered judiciously, and don't overdo it.

....

Treatment of Seedlings.

When the young seedlings are showing six leaves—that is, four leaves in addition to the first two, they are ready for their first potting. For this I use small three-inch pots, placing a single plant in each. The pots, if not new, must be cleaned with scrubbing brush and water. Some amateurs may look on this as absurd, and a useless waste of time, but it is not, and a nurseryman would no more think of potting into a dirty pot than of using no drainage.

Use clean pots, and place in the bottom of each an inch of small drainage. A little piece of dry moss (which costs very little, sixpenny worth would be enough to do a couple of hundred small pots) placed on top of the drainage, prevents it from clogging. Then fill in the soil, which must be richer than that used for the seed pan. The compost I use is leaf-mould and very old cow manure, loam and sand thoroughly well mixed together.

"Oh yes," I can hear some one say, "but where do you get your leaf-mould?" Well, that's no secret. I make it myself from mulberry, apricot and peach leaves, and I find that the labor thus expended is amply paid for by the resulting soil, which I could, but don't sell over and over again.

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Chrysanthemums.

Chrysanthemums may be mulched with fresh manure. Pinch out all the lateral shoots and keep the single stem straight upwards. They may be watered freely while they are growing, it is when the wood is ripening that they should be put on short commons for about a fortnight. Mulch freely, stake up, keep laterals down, and your chrysanthemums will thrive.

If the plants are on a single stem, and you desire to keep them down a little, pinch an inch or so off the top. This will force a break, and you will secure side shoots to form the basis of the future flowering stems. Let these grow 8 or 10 inches and you can pinch their tops off in in the same manner, getting a couple of fresh shoots for every one you had before. These stopping operations are very necessary when you have specimens in pots.

Liquid manuring chrysanthemums is a business that must be watched very carefully in case it is overdone. Weak and often or not at all is the correct plan. The plants need more assistance in hot dry seasons than during a wet one. Strong plants require more manure than feeble ones. Change the liquid manure every seven days if you can manage it, as too much of the one thing begins to pall, even on the chrysanthemum. Give manure one week, soot liquid the next, a little sulphate of ammonin for a day or two, and superphosphate at the rate of ½ oz per gallon for the fourth change. If you can afford to mulch your plants with good live manure, very little liquid manure is necessary.

When the buds begin to appear it is best to hold off feeding for about a fortnight until they increase in size. When they have grown nicely, feed again, and carry it on until the color of the bud is appearing. Some continue feeding until the flowers are right out. We are rather inclined to think it best to be on the safe side by leaving off the feeding as soon as the color is showing.

Treat the plants rationally, and neither overdo the liquid or manure, and you will not be far out.

Chrysanthemum diseases are many. Here are a few simple remedies that may be of some service to our friends.

Black and green fly can be banished by prompt use of tobacco powder. Nikotine wash has the same effect. Soapy liquid also improves. Aphis and fly are not very partial to either of these dressings. A use of the powder leaves no room for complaint.

Rust is the bane of the Australian chrysanthemums. It is found on the undersides of the leaves, and appears in brown rusty spots that disfigure as well as sap the life of the foliage.

A very simple remedy is methylated spirit, finely sprayed or brushed on the rusted leaves. This brushing is best done in the early stages before the rust has got much of a footing, or the spores have had time to distribute themselves.

Sulphide of potassium, ½ oz per gallon of water, or a tablespoonful of kerosene to a gallon of luke warm water are other remedies which ought to be held in view.

Permit no suckers to make themselves at home at the base of the plants. These must be cut.

Orchard Notes.

BY J. W. ALLEN.

As the spring has been so dry throughout the coastal districts, the very best cultivation will be required in order to keep the fruit trees and vines in good growing condition. If rain should fall then no time must be lost in working the ground as soon as the land is dry enough to work.

The marketing of apricots, early peaches, cherries and late loquats, early dessert pears and cooking apples will be the principal work for this month.

Such fruits as are intended for dessert purposes are best handled a little on the green side, else when they reach the town or city where they are to be offered for sale they will be over ripe, in which state the dealers will not buy them, as they will not stand the repeated handlings necessary before reaching the consumer. The grower must not forget to grade all fruits and pack them neatly.

Apricot drying will be in full swing this month wherever this fruit is grown for the purpose.

The earliest cherry to ripen in Victoria this year has been the Guigné Tres Precoce, which is growing at the Wagga Experimental Orchard and specimens of which were ripe enough to eat on November 6th. It is a medium sized red cherry with pink flesh, rather tender for carrying well, but owing to its being the earliest on the market it usually commands a high price.

All orchard land should be kept free from weeds, and to accomplish this the horses and cultivators will have but little rest this month, as an orchard neglected for a few days will soon be covered with a coating of summer grass which will take many a hard day's work to eradicate, and couch grass spreads rapidly when left undisturbed. Where there are bad patches of couch grass, these should be ploughed up and harrowed on a very hot day, as the roots soon die when exposed to the sun.

Passion vines which have been properly pruned and manured during November will now be putting on good growth and blooming freely. This fruit will be ready to meet the demand at Easter, when it usually finds a ready sale at good prices.

Keep a strict outlook for pests, and if trees have not been fumigated or sprayed, as the case may be, the grower should lose no time before beginning to fight them.

For scales on citrus trees December, January and February are good months for either spraying or fumigating: but for fungus diseases it is generally best to spray once before the trees bloom, again as soon as the fruit has set, rather than leaving it until now. In many cases, however, later sprayings are both beneficial and necessary.

The grower should not neglect to either fumigate or spray all citrus trees, so as to ensure clean fruit and healthy trees.

Keep a strict watch over all bandages placed on apple, pear and quince trees. They should be overhauled and all larvæ destroyed at least every ten days, also pick up and destroy fallen fruit.

If fruit fly should make its appearance, infested fruit should be destroyed, so as to assist as far as possible in keeping this pest in check

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Vegetables.

BY W. S. CAMPBELL.

Pull up everything that is not likely to be productive or profitable, such as old peas, beans cabbages, and other vegetables which have run, or have started to run, to seed. Strawberries, which are generally grown in the vegetable garden, are likely to send out runners from all sides, and if some good plants are required for putting out in new beds next autumn, take the opportunity of selecting the best of the suckers, which will probably be found next to the mother plants and remove all others. As soon as the suckers have become well rooted, separate them from their parents by cutting the connecting links. Should the weather continue favourable, the young strawberries, if nicely rooted, may soon be planted out, without waiting for the autumn, and it is quite possible that some of them may bear fruit before the winter sets in, When planting; or, rather, after planting, tread the soil well about the roots and spread a mulch of dung all around the plants as it is quite possible that some hot, dry weather may set in after all; although there may be a risk in planting, it is worth chancing, for so much time may be saved.

Beans.—Any kinds, except the Windsor. or broad bean, may be sown as extensively as may be required. It would not be adviseable to sow beans on the same ground from which beans of any kind or peas have just been removed. It would be much better to try cabbage, or, better still, some roots such as carrot or turnip, and the soil would have a complete change. By constantly growing the same vegetable, or vegetables belonging to the same natural order, as it is called, on the same piece of ground. not only does the soil become "sick" of them, but vegetable pests, insects and fungi, which are common to the natural order, have a much better chance of thriving and increasing than would otherwise be the case. Try some of the runner beans, if sticks or other supports can be provided for them. These can be sown either in single or in double rows, about a foot or so apart; the little labor entailed in fixing up supports should not deter anyone from growing a few rows of those beans.

Broccoli...Sow a little seed of this vegetable, which is much the same as cauliflower, but rather coarser and hardier than that variety of cabbage. Like the cauliflower, it requires good moist soil, well drained, and it is always advisable to use a good quantity of manure and thoroughly incorporate it with the soil when when preparing for planting; this vegetable should be grown without a check if possible.

Borecole, or Kale...This is another member of the cabbage family, and needs much the same management as cabbage, applying abundance of manure to the soil, unless it be naturally very rich. It is worth a trial, particularly by those who live in the cool parts of the country. Sow a little seed.

Cabbage...Sow seed occasionally, just a little, in order that a supply of plants may be available for picking out and for planting whenever required. Sow the seed in drills in a small bed, quite thin. The generally adopted but erroneous method of sowing cabbage seed is broadcast, as thick as possible, with the result a miserable lot of lanky looking plants, to be hauled out by the handful when required for planting. Well grown plants which are ready should be planted out.

Cauliflower...Treat as recommended for broccoli. The seed may not come up so well as the broccoli, for it is a difficult matter sometimes to procure good cauliflower seed; it is worth while paying top price for the small quantity that is likely to be required.

Cucumber seed may be sown in any part of the State if plants are required, and during such a season as the present the growth should be most satisfactory.

Celery should be growing very well under the favorable weather conditions lately prevalent. Sow a little seed, pick out advanced seed lings and plant some of the pricked out well grown seedlings: earth up any plants which are nearly full grown, taking care not to drop any soil within the leaf stalks.

Cress and Mustard sow occasionally during the month to keep up a supply. These salads should attain great perfection with showery and cool weather.

Egg Plant...Probably a sufficient supply of seedlings have been planted, but should any more plants be required sow a little seed, which should come up after sowing.

Maize (Sweet or Sugar)...Advanced plants should be sufficiently well cultivated to keep down all weeds; more seed may be sown if a further supply is required.

Onion...A little seed may be sown if an additional supply be required. Seedlings which are coming up above ground should be kept free from weeds; the weeding must be carefully done or the little onion plants may be pulled up with the weeds if they are thick. In small vegetable gardens the system of growing onions for transplanting is a good one, and if carried out a lot of trouble may be saved in the way of weeding, seed sowing, &c. The seed can be sown in small beds, or in boxes if this should be more convenient, and when the onions are large enough to shift they may be planted out. If the soil is at all dry, the onions should be well watered after planting.

Parsley...A little seed may be sown if there are no plants in the garden.

Peas...The season is all that could be desired for the pea. It will probably be found that the vines have grown much taller than usual, and unless sticks have been provided sufficiently tall the peas have grown into a tangle. Those vines which have been allowed to grow over the ground are even worse, and are liable to rot and die off, and a good deal of loss is the consequence. Some kind of support should always be provided for peas and other climbing vegetables. A few seeds may be sown two or three times during the month, or when space is available.

Potato...Plant out a few rows of this most useful vegetable. Use abundance of farmyard manure, and mix it well with the soil as digging is proceeding. When planting try spreading a layer of dung along the bottom of each trench, and plant the potatoes on the dung. Give the plants ample space in which to grow, the roots may be made from 2 feet 6 inches to 4 ft apart. Lay the sets about one foot apart in the rows, and let them be covered about 5 or 6 inches deep with soil.

Pumpkins...The plants should be spreading well over the ground by this time: but should a sowing have been overlooked, seed may be planted at any time convenient, and a good crop is likely to follow.

Radish...Sow a little seed now and then to keep a supply going.

Spinach...Sow a little seed.

Tomato...If any more plants are required seed may be sown, or seedlings already suitable for moving may be planted out. There should be a good show of fruit by this time in many parts of the State. Tomatos which have been allowed to spread over the ground are not likely to ripen their fruit satisfactorily: they should be trained to stakes or other kinds of supports. There are various methods of training adopted by different growers. Some train to a single stem, pinching off lateral shoots as they start into growth: others train, allowing the lateral shoots to develop and so on.

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Orpingtons.

It may be said that the shape of a fowl or the color of its plumage need not trouble the farmer whose consideration is eggs and meat for his household or the market There is certainly some reason in the contention, but largely superficial, for just as was remarked when treating on Wyandottes, the most perfect specimens of the breed will, if not carefully mated, very shortly deteriorate, and become a flock bearing little similitude to their progenitors, for it must be recollected that all the outward qualities of the Orpingtons, and inward as well, were first the result of crosses, and the continuous selection year after year of specimens that possessed the desired qualities in the greatest excess. Then when all these were at last found combined in a certrin family. standards based largely on the characteristics in this family, or even on a higher ideal were formed, and by these standards the birds when exhibited are expected to be judged, and whether the farmer exhibits his fowls at the local show or not, it will be incumbent on him that while his object is eggs and carcases, he must keep in view the fact that except thought and experience be brought to bear in the mating and breeding, his stock of Orpingtons will soon be that in name only, and in order to show the utility man and the exhibitor as well, the special points and requirements of the several varieties of this breed, the standards issued by the British Poultry Club are appended,

General characteristics of cock—

Head and neck—head small, fairly full over the eye, carried erect

Beak strong and nicely curved

Eye full, bright and intelligent

Comb single or rose, The single comb to be of medium size, erect, evenly serrated, free from side springs; the rose comb should be set straight and firmly on the head, full of fine work or spikes, free from hollow in centre and narrowing behind to a distant peak lying well down to head, not sticking up

Ear-lobes medium size and rather long

Wattles medium length and well rounded

Neck nicely curved. with full hackle

Breast broad, deep and full, carried well forward, long straight breastbone

Back short, with broad shoulders

Saddle rising firmly, with full hackle

Wings well formed and carried close to the body

Skin thin and firm in texture

Flesh firm

Tail medium size, flowing and inclined backwards

Thighs short

Shanks short and strong

Toes, four in number and well spread

General shape and carriage cobby and compact, erect and graceful

Size and weight large, between 9 and 10 lb when fully matured

Plumage close

General characteristics of hen—

Head and neck as in the cock, also body, breast, back and wings

Cushion small, but sufficient to give the back a short and graceful appearance

Flesh and skin as in the cock

Tail medium size and inclined backward and upward

General shape and carriage as in the cock

Weight and size large, about 7 or 8 lb when fully matured

Color in Black Orpingtons—

In both sexes—Beak black

Eye black, with dark brown iris

Comb, face, earlobes and wattles red

Black shanks

Flesh and skin white

Plumage black throughout, with a green sheen or lustre upon it, free from colored feathers

Color in Buff Orpingtons—

In both sexes—Beak white or horn color

Eye red or brown, the former preferred

Comb, face, earlobes and wattles red

Black shanks

Plumage any shade of buff from lemon buff to rich buff, on the side avoiding washiness. and on the other side a reddish tinge : the color to be perfectly uniform throughout, allowing for the greater lustre on the hackle and saddle feathers and of the wingbow in the case of the cock only

Value of Points in Black Orpingtons, Cock or Hen.

Defects	Deduct up to Points
Defects in plumage and condition ...	10
Comb 7, head 5, face 5, beak 3 eye 5	25
Breast	10
Cushion or saddle and back ...	5
Tail 5, legs and feet 5 ...	10
Flesh and skin ...	5
Want of shape	15
Defect in carriage 10, want of size 10	20.
A perfect bird to count ...	100

Value of points in Buff Orpingtons, Cock or Hen.

Defects	Deduct up to
Defects in head and comb 10, color 35 ...	45
Want of shape 20, size 10 ...	30
Defects in legs and feet ...	15
Want of condition	10
A perfect bird to count	100

Serious defects for which birds should be passed---Other than four toes, wry tail or other deformity, the slightest feather or fluff on legs or feet. long legs, yellow skin, twist or side spikes in comb, or comb over to one side, yellow in legs or feet. In Blacks any colored feathers. In Buffs any white or much black in tail or flights, legs any colour but white.

When the poultry clubs standards were compiled and issued in 1901 the White Orpingtons had made no headway in England, and were not included in the standards; however, during 1904 and the early part of this year, the Whites and Jubilees were receiving more attention, and as is usual in England when a breed is likely to catch on, a club is formed, a standard formulated, and encouragement given to exhibitors in the way of special awards

In the early months of last year one of these was formed in England, called the Variety Orpington Club, which shortly after its formation drew up and published the following standards. Such is not yet ratified by the English Poultry Club, but there is scarcely a question but it will be when presented.

Colour of White Orpingtons.

Both sexes—Beak white

Eyes red

Comb, face, earlobes and wattles, red

White shanks

White skin and flesh

Plumage pure snow white with a good lustre, free from any colour

Value of Points.

Head	10
Colour	30
Conditions	15
Legs and feet ...	15
Type and size ...	30
	100

Colour of Jubilee Orpingtons.

Beak in both sexes white or horn color

Eyes red or brown, the former preferred

Earlobes and wattles, face and comb, red

Feet and shank white or pinky white, a little horn colour not to be considered as disqualification for the present

Toenails white or horn

Flesh and skin white

Cock—Plumage—The term mahogany in this standard to be taken as meaning bright mahogany not dark nor maroon in shade

Neck hackle — Mahogany, with black stripe and white tip, the shaft mahogany of same shade as feather : saddle to match. back to follow

Breast—Mahogany with black spangle and white tip, the three colors showing in equal proportions, avoiding a ticked effect on the one hand and a blotchy effect on the other

Wing bow—Follow hackle

Wing bar—Black

Mahogany; black and white—secondaries
Flights ditto, but more white
True tail feathers white, or black and white
Coverts black, edged with mahogany and white tips

Color of Jubilee Orpington Hen

Head and neck to match male bird, allowing for difference in size

Body, breast and back—Mahogany, with black spangles and white tips, the shaft mahogany of same shade as feather. The three colours well broken and showing in equal proportions, avoiding a ticked effect on one hand and a blotchy effect on the other; the effect to be uniform throughout the bird

Wings, as body, with flights as in cock
Tail to follow the cock
Thighs and fluff to follow the breast

Value of points.

Head	-	10
Colour	-	35
Condition	-	15
Legs and feet	-	10
Size and shape	-	30
		100

Color of Spangled Orpingtons.

In both sexes beak black or black and white
Eyes brown
Comb, face, ear lobes and wattles red
Feet and shanks black and white, mottled as evenly as possible
Toenails white
Flesh and skin white
The male bird: neck hackles, black with white ips
Saddle hackles ditto
Breast black with white tips, the two colors showing in equal proportion avoiding a ticked effect on the one hand and a blotchy effect on the other
Wingbow same as back
Wingbar black
Secondaries black and white
Flights ditto, but more white
Sickles black with white tips
Coverts ditto
True tail feathers black, with white tips
Thigns and fluff black ditto
Hen, head and neck ditto
Body, breast and back, same as the breast of the male bird, the effect to be uniform throughout
Wings as body, with flights as in male bird
Tail as in male bird
Thighs and fluff as in ditto

Value of points.

Head	-	10
Color	-	35
Condition	-	15
Legs and feet	-	10
Type and size	-	30
		100

Defects.

Feathers on legs, long legs, poor shape, much white in lobes

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Poultry and Orchard.

The advantages to be obtained in growing poultry near orchards are better seen than imagined. In going about over the west, it is observed that such orchards could be made much more prolific and profitable if their owners would do as this subscriber has done. Being able to have fruit to sell when others do not have it, is a good thing.

When we began setting out fruit trees in an early day in one of the prairie states, we set out some wild goose plum trees. These trees never bore fruit. They have plenty of bloom, but soon the plums would drop off. At that time we observed that the young plum trees were stung with an insect. We did not then know what it was, and they would drop off. We conceived the idea of mrking a poultry yard near those trees on the hypothesis that they were no good, and it did not matter much if they were killed. To our surprize, the first year after we made the change we had a large crop of plums. To this day the same trees are bearing profitable crops of plums. The fowls are always busy scratching under them, and they find things there, too.

A few years later it was our privilege to lay out another poultry yard in an apple orchard. We had never sprayed out trees up to that time, but about the time spraying came into use, we put in a large flock of chickens. Our fruit was much better in quality by reason of it. and the orchard seemed to be all the better in quality by the introducing of a flock of hens and their ever-searching little ones. Should a wormy apple fall off, the hens were busy turning that apple over until they could get a glimpse of the worm, and failing that, they would pick it to pieces and obtain what they wanted, if it was there.

Many people engage in the business of poultry alone, who may as well run to small fruit as to let the land go without bringing in a return of this kind. Others are trying to raise fruit who would not have a chicken on the place. The facts are that no two businesses can be so easily blended as these. One is a help to the other, and the profit can be augmented quite materially on account of it.—The Homestead.

The Sun in Sickness.

o o o

Did you ever notice that when animals are sick and tired they seek a sunny place to lie down? The uncivilised races of men do the same. Savages and animals alike lie down in the sun when they are sick or fatigued. It is instinct that prompts them to do this. They know nothing of the colour of the sun's rays, nothing as to the size of the sun, or its distance from the earth, or the revolution of the earth around the sun. They are simply led by an unerring instinct of nature to seek the sun for healing. They lie in the sun, bask in it, and its potent rays penetrate every tissue and fibre of their bodies, bringing to them a soothing balm, a calming nervine, and the real elixir of life.

Did you ever notice what civilised man does when he is sick or tired? He goes into a house, into an unwholesome room, no sunlight, no fresh air. If he must have heat, he gets artificial heat. He saturates every tissue and fibre of his body, not with the rays of the sun, but with poisonous drugs. The whole atmosphere about him is depressing and ruinous both to mind and body. Sometimes, in spite of it all he manages to live, and get out in the air and sunshine again. Sometimes he does not, and the undertaker comes.

Instinct in some cases is better than civilisation. Instinct teaches the savage and the animal that the main sources of life are sunshine and fresh air, that both are necessary to maintain life or to restore health. So the animal and the savage have sense enough, instinct enough, to stay outdoors in the sunlight and fresh air, while civilised man shuts himself up in a close, darkened room, away from the very elements that would heal him.

Setting Hens.

To be really suscessful one must begin further back than the mere act of putting the eggs under the hen, which means the purchasing of eggs from a reliable breeder of stock of known vigour and worth, for the chic, like members of the human family, has the right to be well born and should be given that right by proceeding as above.

After we have made things ready for the reception of the hen, who should have been left for three days on the nest to prove her good intentions, we remove her after dark to the nest prepared as follows: In a box about 12 x 14 x 20 inches we have turned on its side we place a shovelful of moist earth, loam prefer red, in which has been mixed a small shovelful of coal ashes, and on this the nest material of straw without grain in it, shaping so not to leave too flat, neither so deep as to hinder the hen in turning the eggs—the form of a saucer is about right—and over all we sprinkle a good supply of lice powder. This done, we dust biddy freely with the same and consign her to her three weeks of lonesomeness. Have your nest room in a quiet spot sheltered and not too light, provide a dust bath, good sound grain and fresh water daily and twice during incubation dust the hen freely, and you may be assured of a good hatch.

It is usual with us to set two or more hens at one time, as in so doing if the weather be such as to permit two broods may be given, the one hen to mother, and the other hen returned to the yards and other duties. Eggs should be tested at the end of ten days and all infertile ones removed, thus giving more room to the fertile ones and lessening the chances of nest soiling by broken eggs. Should this happen at any time, and it does frequently where hens are used, take a basin of warm water and wash the eggs, dry carefully and return to the nest prepared with clean straw and no harm has been done.

It will do no harm to confine the hen to the nest the first day by a screen in front of the nest and removing this the second morning, giving the hen a chance at feed and water, by which time in usual cases she will be true to her trust.

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MELBOURNE and SYDNEY.

Agriculture and Stock.

Irrigation on the Farm.

By A. S. Kenyon, C.E.

IRRIGATION may mean either supplementing a rainfall deficient for the whole year, or simply giving the plants water during dry periods within the year, In the first case, the water used must, of course, be caught off land which is not cultivated, while in the latter the land actually being irrigated may yield from the excess rains of the wetter months sufficient water to tide over the trying intervals in the drier part of the year. It may be employed either for increasing the returns obtainable under ordinary conditions or for obtaining yields not otherwise possible. It must be born in mind that the heavier the crop the greater the volume of water required, as the leaf surface or evaporating area is roughly in proportion to the yield. A fairly heavy crop of hay or grain will require for transpiration through its leaf surfaces the equivalent in water of 12 inches in depth. Transpiration is continually going on; but is, of course, greater in the drier months. Hence the moisture of the wet months must be stored for the requirements of the drier. Fallowing, with subsoil stirring, and frequent harrowing of the surface, will conserve and carry forward much water from one season to the next; but these methods cannot obviously be applied to perennial crops. These crops must in almost all parts of the State receive a greater or less volume of added water to insure profitable returns. The volume of water to be added cannot be stated exactly; local conditions so, influence requirements, and are so variable, that only indications can be given the grower. whe must ascertain for himself the correct quantities As instance of the extreme variation in this respect, the Mildura fruit-grower gives his trees 24 to 30 inches during the year, while, for similiar trees at Doncaster, not more than 2 inches are added in ordinary seasans, and nothing in exceptional ones. Near Bendigo, 7 inches has been found sufficient in a dry season to produce heavy summer fodder crops, while in the southern districts a somewhat less depth is sufficient for similiar purposes, For perennial fodder crops, such as lucerne, an almost unlimited amount of water may be given, 36 inches for the year not being excessive. Cereal crops though grown in the moisture months, require, from the practical difficulties in the way of economical distribution, from 6 to 12 inches, or even more.

Applied to cereals irrigation on the small scale will rarely repay the farmer: the profit on these crops being small and the necessary areas large The right kind of crops for irrigation are fodder —for dairying purposes are generally to make ensilage, and fruit trees—especially when near large towns which afford a ready market for fresh fruit. In the more arid of the northern and north-western districts, and especially in the Mallee, the value of a small quantity of irrigated green feed for the working stock is very great from a medicinal point of view, while the health of the farmer himself and his family is greatly improved if fresh vegetables are obtainable on the farm. It is not a matter of much difficulty for the farmer to irrigate close upon one acre of green feed—maize, amber cane, lucerne,&c.—and vegetables; all that is required is an extra thousand cubic yards capacity in his tank. This can easily be filled if channels are near, or from most catchments if properly improved.

With irrigation, as for all good cultivation, drainage is assential. In many of our northern soils, the natural drainage is sufficient; but in some cases, and in most of the southern soils, artificial drainage must be resorted to in order to secure the best results, This may be effected in any of the ordinary ways For orchards the agricultural drain-pipe system is about the best. Careful attention must be paid to the soil and especially the subsoil. when fixing the depth and distance apart of the drains. Drainage of land is a big subject involving many considerations, and needs dealing with in a separate article. Stirring the surface of the soil as soon as possible after a watering is also assential. to prevent evaporation and conserve the moisture Irrigation and continual cultivation are inseparable to insure success.

Australian conditions differing so greatly from those of the old world, whence came our first farmers, have compelled the adoption of agricultural appliances and methods peculiar to the southern continent. The stripper, harvester stump-jump plough, and other implements can be cited in support of the statement as to appliances, while a notable instance of localised methods occurs at Doncaster, the well-known fruit growing district. Here, a system of partial irrigation by small dams of limited catchment has converted a somewhat precarious industry into one of large profits. That peculiar local conditions—conditions rarely occuring in the State—contribute to this result may be granted: these will be referred to later. Doncaster, and its surrounding district, is undulating and, considering its proximity to the sea, is at a comparatively high elevation. The rainfall, especially in the dry months, is, however, subject to great fluctuations, and it is in these months —when evaporation is at its highest—that the plants require the greatest quantity of moisture. As the subsoil is apparently unsuited for storing sufficient of the surplus from the wet or cereal-growing months, the fruit-growers have recourse to stored water at times of drought. The stored water in most cases comes off the orchard itself, and is returned to the soil as needed, generally between the end of November and the end of March—in not greater volume than 2 inches in depth per acre.

The practise of irrigation at Doncaster is not confined to a few enthusiasts. Almost the whole of the land is under horticulture, and the district is dotted with dams. The orders generally are small, and of course many of them are without gullies. Consequently catchments are limited, and of poor quality, while economical sites for storage are rare. Restricted as the catchments are, they are all cultivated—land being too valuable to be allowed to lie idle—and their run off is, in consequence, small. In some cases a few chains of road running alongside the orchard is all that is available, yet with the small volumes used and the economical methods of distribution employed, they suffice.

The type of storage generally may be termed a hillside dam. The storage is partly in excavation and partly in fill, the material excavated is used as embankment to retain water above the surface. Owing to the lack of gullies, the ends of the bank have to be returned to the upper ground to retain the water in store. The bank, rarely more than 8 ft in height, and retaining about 6 ft of water above the surface of the ground, departs from the usual type in many respects, notably slopes and manner of construction. The inner or water slope is generally as steep as 1½ to 1, that is, one and a half feet diminution in horizontal width for each increase of one foot in height, while the outside slope is sometimes steeper, approximately one to one. Crest widths are generally small, 3 to 4 ft being the rule. The slopes mentioned, particularly the water one, would be unsafe in most soils, especially those of a clayey nature, but here, as the dams themselves witness, the material permits the employment of such extreme batters. The explanation is that, by the method adopted for building, the inner face is composed of stuff taken from the deepest part of the excavation, which is largely rock, only slightly decomposed and full of quartz fragments. Where such is not the case the slopes have to be much flatter, or otherwise there is constant trouble and expense in repairs, not to mention the loss of valuable water. In construction the seats of the banks are ploughed and the surface soil removed. The surface soil of the excavated portion is placed at the outer toe of the bank, the stuff beneath is then excavated and built in steep sloping layers. The last layers, which form the whole of the water face are, as already explained, taken from the bottom, and become practically a slant puddle wall, not only to the bank, but to the slope of the excavation as well. This method of building is highly suitable to the local conditions, the rock into which the dams must for the most part be sunk being, as said before, very open, requires facing or puddling, to make it watertight. The rock itself is really more dangerous to the efficiency of the storage than the banks Outlets are composed simply of pipes, wrought-iron galvanised, of from 2 to 3 inches diameter, placed in trenches cut down to the lowest level of the excavation and refilled with clay.

Healthy Horses.

By S. S. Cameron, M.R.C.V.S.

ALTHOUGH, by constant association with them, most horsemen acquire an instinctive comprehension of the normal and healthy features of their charges, it may be well to set down in definite terms what are the signs and habits of health in horses before dealing with the conditions which may induce an abnormal change, or with the methods and practices in management which make for the prevention of such a change.

SIGNS AND HABITS OF HEALTH IN HORSES.

Attitude—*Stands* with feet flat on ground, limbs placed evenly side by side, with equal bearing and weight on each. The horse occasionally stands at ease by resting the hind limbs alternately—the joints are partly flexed, the fetlock is knuckled, the heel raised, and the toe rests lightly on the ground. The fore limbs are never so rested in health.

Rests at night and during the day, when undisturbed, by lying down with the knees and hocks flexed, and the body inclining slightly to one side.

Rises by raising the forequarters first, then gathers the hind limbs under the body, and springs to the upright position.

Gait—Even and rythmical movement of limbs, and even distribution of weight.

Appetite—When Stabled. Eager desire for food, as distinguished from greediness or laconic picking, at regular feeding times. Desire for variant food, such as carrots, green stuff and the like. Refusal of mouldy or coarse food, also bones, lime, sand, earth and rubbish Slow rhythmic grinding of the bolus of food.

In paddock. Almost continuously grazing and moving, except when attention arrested, or when engaged in play, or seeking shade from sun, or shelter from wind and rain. Healthy working horses usually roll when just turned out, whinnying at familiar sounds, or when alarmed, is indulged in at intervals.

Coat—Sleek, flat, glossy, and even (no harness marks) when groomed: greasy to the touch when not.

Skin—Supple and loose to handle; clean and free from scurf when groomed, scurfy when ungroomed. Pigmented (black) in most horses. Equable warmth and sensibility to touch all over.

Ears—Mobile, alert and evenly pricked.

Eyes—Eyeball bright and glistening, without excess of moisture or tears, sensitive to touch or approach of finger.

The pupil transparent, in shape oval or oblong, with rounded ends; sensitive to light, contracting in a bright light and dilating in darkness.

White of ear (sclerotic coat) clear, even white; not bloodshot or tinged with yellow or other color.

Haw of the eye and conjunctiva (lining of eyelids), carnation red, and moist.

Eyelids mobile and sensitive.

Lips—Mobile, dry, smooth, velvety, and sensitive to the touch.

Nostrils dry, except for an occasional drop of moisture below the tear duct.

Mouth—Lining dull pink color, moist and free from clamminess.

Teeth—Incisors free from chipping or signs of wear, except on nipping surface; molars even grinding surfaces, free from jaggedness at edges and decay

Gums—Upper bars level with teeth. soft and springy, but not tense, painful or swollen, except during teething.

Tongue mobile. moist, and free from furriness.

Visible mucous membranes (linings of nostrils, eyelids, and vulva), carnation red in color and moist.

Hoofs shape approaching the circular on the ground surface; the hind hoofs are somewhat more oval. The natural angle at which the front of the hoof meets the ground at the toe is about 50 deg in the fore feet and 55 deg in the hind feet, the latter being more upright and having usually higher heels. The surface of the wall should be even, smooth and polished, free from cracks, rings or unevenness of growth. Heels broad and open. Bars strong and thick, to afford bearing surface for heel of shoe. Frog broad, full and springy, free from moisture and fœtid smell; should show signs of wear by contact with ground. Sole dry and flakey, free from moisture, absence of softness, and powdering texture. The hoof horn should be tough and yielding, not rigid, brittle, or shelly. The off and near hoofs should be uniform in shape and size.

Anus full and prominent in young horses, clean and free from scurf and scales.

Defæcation, moderate frequency of bowel movements, the average being ten or twelve times in 24 hours, unaccompanied by fetid flatus and without unpleasant smell.

Fæces (dung). In quantity from 25 to 35 lbs during the 14 hours, a greater part being passed during the night than the day time. Appearance moderately dry and balled, with moderately firm coherence of particles, but without gluey consistence or coating, free from whole grain or only partially disintegrated food particles; color corresponding with character of food. (Balled fæces of normal cohesion float in water.)

Urination—Desire to stale on returning to the stable or on being bedded down.

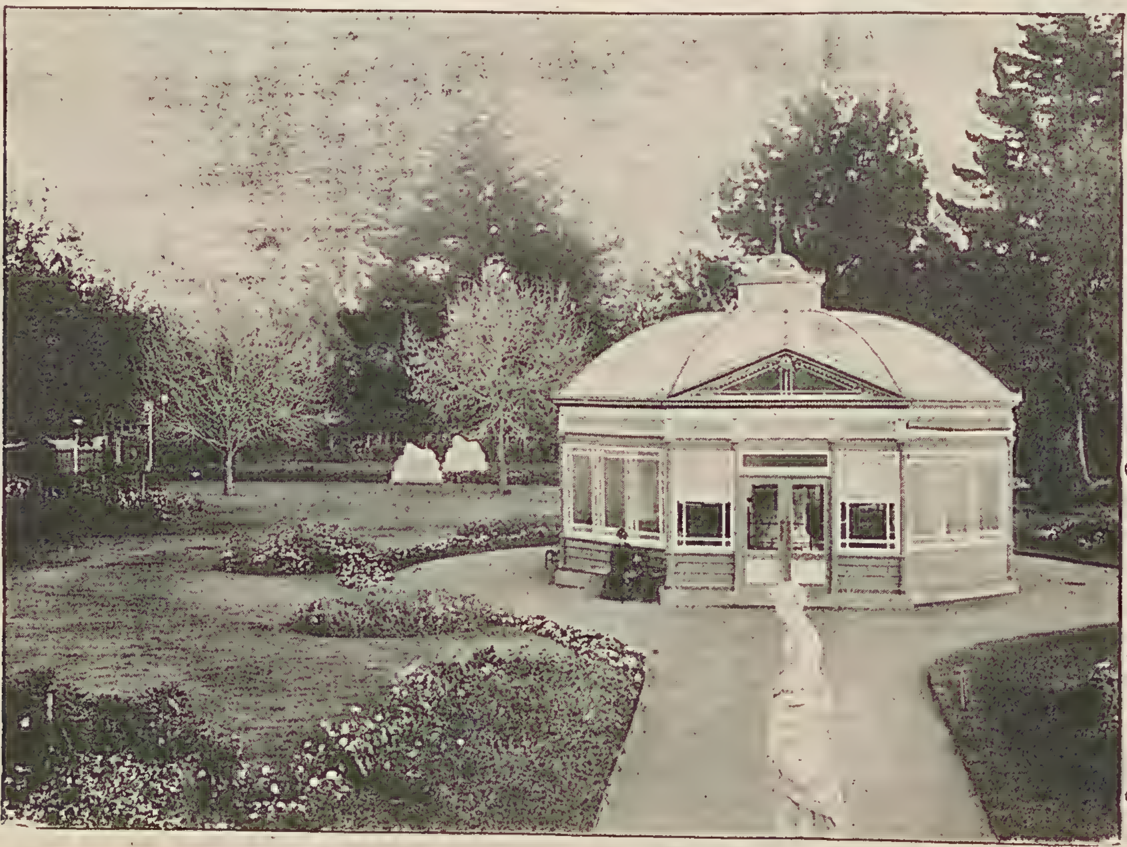
Urine quantity varies according to diet and activities, being less in horses at work, average about nine pints per day, passed at three or four stalings. Appearance yellowish red or straw color, and turbid without excess of sediment, blood tinge, or sliminess, or fœtid color. The urine of mares in season has an oily consistency

Internal temperature 100 to 101 deg F. External moderate and even warmth of body surface: warmth of ears, extremities (pasterns and cannons), and hoofs uniform

Pulse from 35 to 45 beats per minute

Breathing from twelve to fifteen respirations per minute; even rhythmical rise and fall of ribs and flank, absence of tifting cough or other noise, and of double flank heave on sharp exercise.

* * *



Ballarat Gardens, showing Pavilion containing statuary presented to the City of Ballarat by the late Mr. Thomas Stoddart.

Dairying.

(BY C. C. LILLIE.)

Speaking in a general way, dairying may be considered as a distinct business when it is the leading branch of one's farming. A person is more likely to make a success on the farm if he directs most of his efforts to one branch or speciality. With one the leading purpose may be growing wheat; with another beef cattle, with still another draught horses and so on. The farmer in each case is governed by his partiality for some particular speciality, and also by his environment, climate, soil, nearness to market, &c. Whatever speciality he selects is his own business.

It is not necessary that he confine himself strictly to this business, for instance, if his purpose in farming be wheat, he may have a fairly good investment in poultry, or pigs or horses, and yet bestow his principal attention to the business, his speciality, from which he derives the larger part of his cash income. So one is a dairyman when his rotation of crops is arranged to produce the largest quantity of food calculated to maintain in the best possible condition a herd of dairy cows from which he derives his principal income.

Dairying requires Technical Knowledge.

No branch of live stock industry requires more intelligent, systematic thought than dairying. To select, feed, breed and care for a herd of dairy cows requires an intimate knowledge of the subject and of agriculture in general. It is worth any man's ambition. The dairyman must be a student. He must study not only the cow and her care, but he must study crops as well. His success as a dairyman depends upon his successful food crops. This compels him to study the soil and to keep it in a high state of cultivation and fertility.

No Slack Season in Dairying.

Dairying differs from some other specialities in farming that it is a year round business. It gives the farmer and his family steady employment throughout the year. This is one reason why some people object to it. They argue that if a farmer works hard through the growing season, he is entitled to considerable leisure in the winter, and they expect to have but little to do at that time.

This, of course, is all right from one point of view, but it is not so from another. It is not common sense for a farmer to complain about the small profits while he arranges his business so that he can be idle in the winter time. The merchant works the year round; the manufacturer reckons to run his plant twelve months in the year, and the banker would object to closing his bank for a few months even. Yet the farmer or some farmers at least take particular pains to have little or no income during a part of the year.

I am not arguing that the farmer should do more labour than he can afford to do. It is impossible for a man to toil in the field day after day, working long hours, and to look after the business affairs of his farm practically. Very few men can do the work of two men for any period of time: hence, from a business point of view, it is clearly the duty of the farmer to employ more labour, to toil less himself. He should do the planning and directing. When he looks at the matter from this standpoint, he will then arrange his operations so that he may have a steady income the year through. In this respect no branch of farming returns a better and more uniform income the year through than dairying.

Dairying a Cash Business.

One reason why dairying is a good business is because its returns are in cash. The dairyman need never run up a bill at the grocery store. He need not ask his men to wait till some crop is marketed before he can pay them. He feeds the cow to-day, to-morrow she pays him back in milk, and every week or every month his bills are settled in cash without recourse to the bank.

In dairying the element of speculation is almost completely eliminated. The prices of dairy products fluctuate less than almost any other product on the farm. Some years money is made in fattening sheep or steers; in others it is almost impossible to get out of losing. To be a successful fattener one must not only buy right, but he must sell right. There is an element of speculation, of uncertainty or luck, which is not to be found in dairying. I have heard of several men who have been compelled to mortgage their farms through loss in fattening sheep and cattle, but who ever heard of a man who had to do this through loss in dairying?

It is no exaggeration to say that dairying is the most profitable branch of live stock husbandry. Probably, all things considered, it is the most profitable branch of agriculture. As a proof of this we find that individual dairymen as a rule have the best buildings, the best kept and the most productive farms, and are really the most productive men of the community. Dairying communities prove that it is profitable.

When journeying through the country a person can tell when he strikes a dairy community by the appearance of prosperity on every hand. Land in these sections has a higher value, and the very towns speak of the thrift of the surrounding country.

One can conscientiously advise a young man just entering on the business of farming for himself to put his money into dairying. It is a safe, conservative, cash business, and devoid of speculation. It offers opportunities worth the ambition of any man.

The Care and Preparation of Seed Potatoes.

BY GEORGE SEYMOUR.

The following questions are being asked every day:—

1. What is the best way to keep potatoes intended for seed?
2. Is it better to plant whole seed or cut?
3. If cut, what should be the size of sets, and what number of eyes should be left to each piece?
4. What is the best depth to plant?
5. What width is desirable between the rows, and what distance should the sets be apart.
6. How long should seed be cut before planting?

It is proposed to briefly answer these questions seriatim;—

1 Keep your seed in a cool, dry place, at a temperature of 35 to 4 deg. Fahr. As possibly no grower has cool storage, a good substitute is a piece of firm, dry ground, under the shelter of pines or other evergreen trees. Spread the tubers out thinly, and turn often. Some growers recommend excluding the light. This is a mistake; the more they are exposed to the light and, if possible, the sun, the harder they become. A tuber that has become green will resist an ordinary frost, and may remain exposed the whole winter on the surface of the ground without rotting.

2. The matter of cutting seed or planting whole sets is largely a question of £ s. d. On the question of cutting, nearly every one has his own method. Some say cut to one eye; others say plant whole sets; while some hold that the stem end does not produce such good potatoes as the crown. Another will advise to cut the crown off. It may happen that, under certain conditions, all these methods give satisfactory results. But the question is, what is best all round? First, it is not wise to cut to one eye, unless the seed is very strong, the land a first-class potato soil, and in good tilth. Whole seed should be used if the ground is very moist, and the weather warm at planting time, or when green manure is ploughed down on the seed. A large number of experiments have proved that the stem end of a tuber will produce as good potatoes as the crown. Do not cut the crown off, as from it is as a rule, the strongest shoot starts.

The rules to observe in cutting seed are; First look for the well-formed eyes, which throw out the strongest shoots, and cut the tuber so as to have at least one to each set. For example, a line drawn across a kidney potatoe is cut so as to divide the two strongest eyes in the potatoe. The other method would be to cut it straight across, making a stem and a crown set of it. And another so as to cut four sets, giving each set one strong eye.

3. In a dry season, or districts with light rainfall, large sets are the best, as the plant in the early stages of growth depends largely on the parent tuber for moisture until well established. It is better to leave more than one eye, as all eyes do not throw out shoots. A large set with many eyes is just as liable to rot as a smaller one with only one eye. It is the condition of the tubers and the state of the land that causes seed to rot. Sets with a single eye should only be planted in well-prepared land suitable for potatoe growing

4. From 4 to 5 inches has been found the most suitable depth to plant. From a series of experiments carried out over a period of six years at the Central Experimental Farm, Canada the best results were obtained from those planted from 3 to 5 inches deep in a sandy loam. If planted shallow, early varieties, or crops in early districts, suffer from the potato grub.

5. The width between the rows, and distance between the sets, must be regulated largely by the character of the land. On ordinary soils, 27 inches to 30 inches has been found a suitable width, and from 18 to 24 inches between the sets. But on rich land that retains the moisture and in districts with a good rainfall during the growing period, they may be planted as close as from 15 to 18 inches between the sets.

6. Seed should be planted the same day as cut. It is not necessary to use any material to dry the cut sets, as a cut tuber does not bleed. The potato is composed of starch, and naturally dries quickly; if it does not, it will rot if put into the ground. Do not cut more seed than you can plant during the day, for if rain falls your work may be stopped for several days. If the seed gets wet, it will be liable to rot. After rain, do not start planting with cut seed until the ground is dry.

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The February Number of . . .

The Australian Gardener

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Flower Garden.

Ornamental Gardening.

BY W. ROBINSON.

What is an ornamental garden? It is a plot of ground worked up and laid out in various beds, with good walks, which are, or should be, on a curve throughout, only where it cannot be avoided, such as a terrace or lawn. Each bed should contain a speciality of plants or trees to suit its position. These kinds of gardens are most desirable, and such localities as the Mount Lofty hills are favourable for carrying out any idea imaginable. Great headway has been made of late years in beautifying the residences in the hills with these gardens. The seasons of late years have impressed me very much that more shade trees should be planted, and those who are fortunate enough to have plenty of water should have nice grass plots, surrounded with some umbrageous trees and bowers, for shade. During the spells of hot weather they are cool and refreshing, and become favorite resorts in the gardens.

Planting of the gardens in general should be carefully thought over and worked out before planting takes place, so that we find in after years everything is in its right place, and is either a fine specimen plant or is doing its duty in covering up exposed positions, or making a fine break for storms.

In most of the old gardens too many conifera have been planted in the best positions of the grounds and have become a trouble to smaller plants and shrubs, and not of much credit to themselves either, through being punished with root cutting and having been trimmed in some way for something else.

I therefore strongly advocate planting the following trees for—1. Shelter purposes. 2. To break an exposed view. 3. To furnish the pieces of ground leased from the Council and open to the public. And (4) planting up Parks and Recreation grounds.

The whole family of Abies:—
Araucarias Imbricata.
Cedars.
Cupressus.
Juniperus.
Pines.
Rentinospora, plumosa.
Thuya gigantea.
Sequoia gigantea.
Interspersed with
Acacias of sorts, baileyana (bright yellow).
Acacia, dealbata, pruinosa (silver foliage).
Acacia, pycnantha (golden wattle).
Eucalyptus, ficifolia, all ornamental foliage.
Quercus, Pyrus aucuparia or Mountain Ash.

The best flowering cratagus of various coloured flowers Also Liriodendron tulipiferum to be planted freely and less of Oriental planes. The latter has proved itself not a healthy tree after the age of ten years in the hills.

The above conifera and deciduous and flowering trees go well together, and are most desirable to have if the grounds are available and planted as above.

When this family is out on the boundaries of the garden, there is every prospect to grow smaller shrubs and trees to better forms and greater results, with comfort and satisfaction to all parties concerned. Where a drive or large walk can be laid down and beautified with ceracus of sorts and maples planted alternately, the result would be a glorious show in spring, with autumn tints.

Walks should be adorned with roses and carnations, with pillars and arches of roses, likewise of rhododendrons and herbaceous plants; of flowering shrubs, Philadelphus, wigelia, and arches of clematis and bignonias of sorts, filled up with bulbous and tuberous plants too numerous to mention. All of these should be backed up with ornamental shrubs of various colors and shades of green and variegated holly or ilex, rhus, liquidambar, amalanchias, and hosts of other species.

Borders of annuals should be situated in selected beds, surrounded with roses. Where water is plentiful grass can be used, for coolness and cheerfulness.

I also advocate that where hedges of pittosporums, laurestinas, and laurels are well looked after, they should not be planted in the gardens as shrubs, as the quantities of beautiful and graceful shrubs are more desirable which grow without being clipped, and they look more graceful.

Palms will grow in the hills, but are damaged in the winter with storms. I shall only advocate one or two of the hardiest being planted and under most favorable and sheltered conditions: Chamærops excelsa, and humilis.

Ornamental grasses and bamboos should have a place if water is plentiful from a soak or in any other form. To make a pond or small lake, an aquatic group of plants tend to form a beautiful corner, for which iris may be included.

The lawns should be as convenient as possible to the dwelling, and if the grounds are large enough to make room for specimen trees on it, for shade purposes, auracaria imbricata (ornamental), and weeping elms and ash, should find a position. Wherever soil of a sandy nature exists ericas should be grown freely.

All surrounding borders and beds should have neatly planted hedgings of rosemary, thyme, gazania, and echeverias.

As fundamental principles for successful gardening:

Do not garden beyond your water supply.
Have every inch of land growing something of beauty and usefulness.
Do everything at the proper time, and
Use everything for its proper purpose.

There has been a general alarm this season in reference to the plague of moths, and the question is often asked, "Are they dangerous to fruit?" So far as can be ascertained, they are more likely to prove a plague to ground crops, such as cabbages, tomatoes and such like. There has been time for the grubs to show themselves, if they are going to do so, in numbers, and they are not much in evidence. Some writers refer to them as 'worms.' Why cannot we get rid of this slipshod style of writing? The grub is one stage in the life of a moth or caterpiller, but a worm is always a worm.

Horticultural.

VACANT beds should be raked over and regularly, watered, so as to germinate seeds of weeds which can then be dug under, and thus save a lot of trouble in weeding. Sow a few seeds of several varieties of hardy annuals and perennials in nursery beds which can be sheltered from hot winds and sun, and be weeded, watered and protected against birds and other destroyers. The plants will be ready for setting out directly the first soaking rains occur, and time will be gained. But it is not advisable to sow too many of any sort at so early a period, because it often happens that such plants fail to develop their perfect character. Pansies do best when started early, provided they can be protected from the great heat and dryness. Our most reliable seedsmen always publish descriptive catalogues of the favorite flowering and ornamental plants, therefore it is not necessrry to crowd these notes. It is worth while to visit the Botanic Garden and some of the large nurseries and take notes of the plants best suited to requirements.

Seeds of autumn flowering plants should be gathered directly they are ripe enough. Some of them must be gathered almost before they are ripe, because the capsules split open at once when ripe and scatter the seeds all over the garden. Seeds of sunflowers are very attractive to sparrows, and they seldom leave a seed for the grower unless the heads are covered with a mosquito net. All seeds need to be protected against mice, and many kinds are liable to be attacked by weevils. If these insects are found to be among the seeds they should be placed in a jar, a little bisulphide of carbon put into an egg cup among them, but not poured on the seeds, then covered to prevent the fumes escaping, left twelve hours, then taken out, put in a safer place until wanted. Do not smoke a pipe whilst handling bisulphide, as it is explosive and the coroner may have to be called.

Dahlias require a good deal of water and will benefit from mulching on the surface, or from frequent applications of weak liquid manure at the roots. As the top growth is very brittle it is liable to be snapped off against the wire supports unless these are placed high enough. The surface soil should always be kept loosened to a depth of 2 or 3 inches, and this remark applies to all plants, because air is as necessary to the roots as to the leaves and branches. Hollyhocks, delphiniums, foxgloves, and similar tall plants, should also have stakes to support them.

Save seeds of native or Australian plants, or gather them even where growing in their wild state, for exchange with correspondents abroad. Seeds of kakeas, callistemons, eucalypts, and numerous others can be easily separated from the carpels by exposing them to the sun on a sheet for a few days when they will drop out.

Plant a few gladioli, some Italian tuberoses and other bulbs, corms and roots for early flowering. All such should be surrounded in the soil with a little clean sand to keep them clean. This class of plants do best in a rich, sandy loam, not too damp, but certainly not dry.

Bulbs should be covered with their own length of soil; for instance if the bulb is 2 in long it should have 2 inches of soil above it. Gladioli and other corms will do usually with 1 inch above them, but cyclamen should have the crown level with the surface.

Continue to bud roses, but previously force the sap to rise by liberal watering both the stock and scion plants. Ten days later loosen the ties, else the new growth may be choked. Dig in some old manure from a cowyard and supply plenty of water. The best material for ties on buds is cotton wick. Roses do not like being crowded by other plants, but need a windbreak on north and west aspects at a distance of say, not less than 25 ft.

Chrysanthemums, if too tall, may be cut back a little, but if pruned too close the flowering will be delayed considerably. Give them a little weak liquid manure twice a week, and water at frequent intervals. Verbenas and petunias, if the growth is old and lengthy, should be cut back or else layered, and the new growth from layers removed to a fresh spot when well rooted. Loosen the surface, cover in some old manure, and water well. Any other plants that are difficult to root from cuttings can be propagated by layers. With a sharp knife slip off a little of the bark and wood on the underside of a branch or runner, then peg it into the soil or into a pot containing soil, keep it moist, and in time roots will be developed. When it is considered that the roots are strong enough to support the new plant, cut it away from the parent and plant where required.

Physalis franchetti, or baloon berry, is closely allied to the Cape gooseberry, but the envelope and its stem are brilliant crimson, the rest of the plant being bright green. The berry itself is crimson, and the baloon as large as a duck egg. The plant spreads after the habit of couch grass, and dies down in winter. It thrives in a rich, sandy loam, if it is moist. There are also about 100 varieties of chillies, bird peppers, and capsicums, large, small, and medium, with every shade of yellow, green, red, purple, &c., as well as nearly black and almost pure white. Some are annuals and others last three or four years. An assortment of these brilliant pod-bearing plants would make the garden quite gay at the end of autumn, when flowers begin to get scarce, more especially if variegated beets, kales, coxcombs, amaranths, chenopodiums, atriplex, and other brilliantly colored foliage plants are associated with them....Observer, January 27.

Vegetable Garden.

IN this department, perhaps more than any other branch of gardening, we are utterly dependent upon the weather, if the weather does not supply the necessary amount of rain then we have to fall back upon other sources of water.

Very easy to talk about watering this that and the other, if the water is available; very easy to talk about planting anything you like, but without water seeds are better in paper. If then, and it must be a very big if, under the circumstances, water can somehow or other be obtained—

Beans.

Further sowing may be made time to time according to the size of the household, of different sorts, French beans, butter beans and Lima beans. The French bean, Canadian Wonder, seems the most fancied, it is a good cropper and has a very attractive appearance. The tall Lima beans are very prolific, but require high staking, so that gardeners content themselves with the dwarf sort. Butter beans are a delicious sort of French bean, far nicer than the ordinary kind, but the color is against them. Fashion requires a green bean, so the butter beans are out of it.

Cabbage and Cauliflower

may be sown now for planting out later on, though the early plantings of late years have been more or less unsuccessful owing to small green caterpillar which does so much mischief amongst them.

Cucumber, Melon, and Pumpkin Squash

should be by this time pretty well advanced. They require a liberal supply of water, and from time to time should be stocked and pegged down to prevent them blowing about in the wind: where they have grown sufficiently for one plant to reach another, they generally hold themselves together.

Lettuces

are an uncertain crop at this time of the year, more particularly if water cannot be supplied, but there is a better chance of success with them if the seed be sown where it is to stand. Years ago it was the fashion to drop three seed of lettuce at the back of a dahlia stake, for two reasons, the lettuce was attractive to snails and slugs and kept them away from the dahlia, and as the dahlia was planted in rich manure and constantly watered, it gave the lettuce a fair show to go ahead before the dahlia got too big and smothered it.

Generally mulch everything with almost anything available.

The Cultivation of Tomatoes.

THE cultivation must be of the most intense kind to secure a good crop. The plants should be cultivated both ways, at least once a week, and after rain, to prevent a crust forming. In time of drought the cultivation must be frequent enough to keep the soil covered with a dry earth mulch.

If the vines are staked and tied up the cultivation should be continued until the fruit begins to ripen. As the vines grow and branch out care is necessary in cultivating to avoid dragging them with cultivator or swingletree. Carelessness at this point may cause the young fruit to drop off.

This is an expensive job and many growers avoid it. Some phenomenal crops were grown last season without staking. The anti-stakers claim that more fruit set on vines not staked. The other fellows say that this may be true, but that the loss from rotting where the tomatoes lie on the soil more than overbalances the gain by a larger set of fruit. The only sensible way to settle this question is by a series of experiments extending over several seasons. This can be done by leaving a part of the crop unstaked each season and carefully noting the result.

f stakes are used they should be four or five feet long, and as near as may be one and a half inches square. The best time to do the staking is soon after planting and before the first cultivation. If the plants are tall they should be tied to the stakes at once. Otherwise the wind may break them or whip off the first blossoms.

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Agriculture and Stock.

Lucerne.

BY W. PEACOCK.

Too much cannot be written of this valuable fodder plant. From the owners of all classes of live stock it demands attention. It is not as generally known as its value warrants. Amongst many farmers and stockmen there is a mistaken idea that it will grow only upon the first-class alluvial soils. Under proper management it gives excellent returns from a diversity of soils and under varied conditions. As a suitable crop from which to make provision for stock for periods of scarcity, lucerne has no equal. It can be kept for several years in the stack without seriously deteriorating. No farm should be without an acre devoted to it. It has an important place in a profitable system of crop rotation. In mixed farming it is valuable for horses, cattle, sheep, pigs and poultry.

Varieties.

The variety most worthy of cultivation is the common or European lucerne, Medicago sativa, and the one most cultivated in this State. A variety of French lucerne, Medicago media, was introduced a few years ago, and is supposed to be a hybrid of the common lucerne and a clover. It is not so robust as the former, and does not yield so heavily. It was claimed that it grew better than the common variety upon the light soils.

Turkestan lucerne, Medicago sativa, was obtained in rather large quantities by the United States Department of Agriculture from Turkestan. It was reputed to be more drought and cold resistant than the common variety. Several strains of this variety are at present under observation at the Bathurst Experimental Farm,

Soils suitable for Lucerne—The soils best adapted for its growth are the rich alluvial deposits along rivers and creeks, having a supply of free water from 15 to 30 feet below the surface. Such deposits should be loamy rather than stiff, allowing of free penetration of the roots and natural drainage. Heavy clays are unsuitable. Strata of coarse gravel and stones between the surface and the free submoisture should be avoided, as the connection between the surface and submoisture is severed, the roots being unable to reach the water level, from which to supplement the surface rainfall. Under favorable conditions the roots may penetrate 30 or 40 feet to the water level, thus allowing of considerable growth during periods of limited rainfall. Considerable advantage under certain conditions is derived from the action of its vigorous root system, the soil being thoroughly subsoiled and sweetened by such agency. Upon soils such as the above the yield is considerable, as many as six or seven cuttings being made in one season, about five to 8 tons per acre. Upon the lighter soils of the uplands, such as the typical wheat lands, it may be grown profitably. There being no free water available at a reasonable depth under such soils, it is dependent solely upon the rainfall for its moisture. In a favorable season too light cuttings may be taken and the area grazed for the remainder. It is for this latter purpose that it is so valuable upon such soils, and provides an acceptable green bite when the natural pastures are brown during the summer.

I know of no perennial fodder plant that will give the same returns from such soils. As a subsoiler and soil renovator it excels, and is therefore valuable in a rotation.

Preparation of the Soil.

The preparation of the soil should be thorough: it is extremely impatient of slipshod methods. Being a perennial and known to give fair results upon the best soils twenty-five years after seeding, it naturally pays for liberal treatment to ensure a vigorous stand. A poor stand is most disappointing; weeds take possession of the bare land, and heavy yields and good clean hay cannot be expected. Where weeds are likely to prove troublesome a clean cropping, one requiring frequent cultivation, should precede it, such as maize, potatoes, &c, care being taken to cut out all weeds. A comparatively free working loam should be ploughed 7 or 8 inches deep about three months before seeding time, to allow of the inverted subsoil to mellow and sweeten. If the subsoil be heavy a subsoil plough could be used to advantage, the land being stirred from a foot to 15 inches deep; such increases the retentive power of the soil for moisture, which is important to help the seedlings over their initial difficulties. Prior to seeding, the surface should be brought into a good tilth and all weeds killed by plough, roller and harrows. The seeds being small they should not be covered deeper than from half to one inch. This cannot be ensured when the surface is rough. All furrows should be filled in by cultivation, and the ridges smoothed to facilitate the use of harvesting machinery.

Seed per Acre.

Upon the rich alluvial deposits from 15 lb to 20 lb per acre should be sown. A thick stand is desirable to ensure small stems with a large proportion of leaf, these being essential for a good hay. Upon the lighter lands from 10 lb to 12 lb would be a desirable seeding. Care should be taken to obtain good seed, free from weed seeds, especially those of the parasite dodder. These seeds are much smaller than those of lucerne and are readily removed by screening. Lucerne attacked by dodder sdould never be cut for seed. The seed may be sown by hand or any of the machines designed to sow small seeds. If by hand it would be wise to sow half of the quantity in one direction and the other half casting across the first sowing to prevent any possibility of missing strips, which is often the case with the most careful sowers.

In general practice it is preferable to broadcast the seed. Where troublesome weeds are apt to choke the plants, or moisture is so limited as to necessitate frequent cultivations, sowing in drills is preferable.

Covering.

The seeds should be very lightly covered, and to ensure this a lever harrow, with the teeth sloping at an angle of about 45 degrees backwards should be used. If an ordinary harrow be used, some bushes or other material should be placed between the teeth to prevent them entering the soil too deeply. It can be covered very well by a drag of green bushes instead of the harrow. When the surface needs consolidating a roller should be used after sowing, to be followed by the harrow. The surface when left smooth by the roller is apt to crust after rain, and moisture is also lost by evaporation, which generally cannot be spared. The best time to sow is in the early autumn, preferably about March if germination can be assured. The plants get well established during the winter and early spring, and are enabled to withstand the dry summers which are invariably the rule. In seasons of sufficient moisture throughout the summer, spring sowings are successful, but generally speaking such conditions do not exist, and the autumn seeding is preferable.

It is sometimes the practice to sow wheat, oats, or a similar crop as a cover crop for the young lucerne. Such practice cannot be too strongly condemned, as generally all the moisture is required for the lucerne. The young lucerne plants are also drawn and weak in their endeavor to get to the light, and lacking in sturdiness and vigor, which are essential. The young plants should be cut early in the spring, as soon as the mower can get hold of them. This checks any weeds which may appear, and if the season turns dry they are better able to withstand it. If a dry summer is feared, it is better to leave the first cut upon the land to act as a mulch. Such practice helps the crop to weather through its most critical stage. This would interfere with the quality of the hay which might afterwards be gathered, but in the dry summers the benefit from the mulch far outbalances the depreciation of the succeeding crop.

In the first year much must not be expected excepting under very favorable conditions or when under irrigation. Lucerne is a summer crop and is practically dormant in the winter. Upon the advent of warm weather it thrives quickly, and is ready for the mower about the end of October. At this season of the year the weather very often proves unfavorable for haymaking, and as the first cutting usually contains weeds it is beneficial to make it into ensilage. If requred for this purpose it can be cut earlier, and should be carted direct to the stack or pit, and not be allowed to wilt. It can be carted in showery weather, but this is not advisable when the weather is very wet.

By cutting early and making it into ensilage the second cut is ready before it otherwise would be and in wet weather suitable for haymaking. For hay it should be cut as the first flowers appear, which is usually about six weeks after the preceding crop is cut. If left longer the lower leaves turn yellow and fall off, the stems are coarser and the resultant hay inferior. In mowing, the crop should lie evenly over the land, and the swathboard should not be used if it can be cut without. In very heavy crops and the soil damp, it may be advisable to turn the crop over whilst in the swath to allow the sun to act upon the under surface, otherwise it would be unevenly wilted and may also turn yellow. The field should be cut in narrow strips to allow of evenness of wilting, and the horse rake when gathering cross the swaths. If the rake runs with the swaths, and the crop is rather dry, considerable leaf is lost by the stems running through the teeth of the rake.

To prevent waste of leaves, extreme care is necessary. It should be raked on the tough side rather than when too dry. If very dry it would be better to defer raking until daylight the next morning. After raking into windrows it should be cocked with care, so as to prevent waste of leaf, and in building the centre of the cocks should be kept highest, so as to enable them to turn a shower. If well wilted the cocks may be of a fair size but not too large; the curing process goes on more quickly in small heaps and it would be ready to stack earlier. Small cocks have the disadvantage of offering a larger surface to the bleaching effects of dews and showers. In very favorable hot weather the hay may be stacked three or four days after cutting. In the earlier and later parts of the season it may take from one to two weeks. It is important to have it cured as quickly as possible, as rains and heavy dews interfere considerably with its quality.

When the weather is unfavorable, and the hay carted on the soft side, it is wise to make narrow stacks, so that the curing will go on after stacking. Well cured hay in the field is stacked safely in broad and large stacks. In the spring or autumn it is frequently difficult to cure the hay, and it has of necessity to be stacked on the soft side. To prevent undue heating narrow stacks are built and flues can be put in to advantage. These latter are easily made by first laying a couple of posts or logs, 6 or 8 inches thick, parallel to each other and about 8 inches apart, on the land, and long enough to reach the middle of the stack. A few sticks are placed across, to prevent the straw or other material used for the stack bottom from blocking the air channel. A chaff-bag full of straw or chaff is then stood upright over the end of the logs or posts, and the hay built around it. The bag is lifted as the building progresses until finished. An air-channel is thus left from the outside of the stack at the bottom and upwards through the middle, the outside being in the roof. A few such flues in narrow stacks are helpful under certain conditions, but should only be used when the weather does not allow of sufficient curing in the field, Well made hay retains its leaf and rich green color. After the haymaking season, it may be grazed lightly through the winter, but the plant will last if stock are not turned upon it.

During August the stock should be taken off and the surface thoroughly cultivated, to loosen it and destroy seeds. A most efficient implement for the purpose is the Lucerne Digger and Cultivator, patented by Meesrs Wilton Bros., of Mudgee. Ordinary cultivators, with very strong narrow tines, as well as disc arrows, are also used. When the soil is tramped tightly around the plants by stock, it becomes a more efficient conductor of heat, and the increased temperature of the soil in hot climates very often destroys the plant. The cultivated surface remains much cooler, and in hot districts a loose surface is very desirable.

Lucerne under Cultivation.

To irrigate lucerne efficiently and economically, the land should be graded into perfectly level checks. The size of the checks are determined by the fair water supply, one-acre checks are convenient. It is impatient of stagnant water, and it should not be allowed to lie on the plot more than twenty-four hours. In the hot weather it is wise to irrigate about ten days after cutting, when there is sufficient growth to prevent the scalding of the very tender leaves, excessive evaporation and crusting of the surface. A plentiful watering between each cutting is sufficient. It may be cut as frequently as every four or five weeks.

Value as a Fodder.

Lucerne is an extremely valuable fodder for all classes of stock. When fed to cattle and sheep care must be taken, as they are very likely to suffer from bloat or hoven. For this reason it is best to feed to such as hay. It is best fed in conjunction with cereal hays or grasses. It is very valuable for milch cows and breeding ewes, as it increases the milk supply. It contains a large proportion of poteids and lime, essential to bone and flesh production. For this reason it is valuable for growing animals.

Stock should be brought from other foods on to lucerne gradually, or otherwise digestive troubles may occur. It is laxative and diuretic, and is one of the most valuable fodders during droughts when green grass is not obtainable.

Lucerne, in common with other leguminous plants, is able by means of bacteria, to fix the free nitrogen of the atmosphere in its tissues. By growing lucerne the nitrogen in the soil may be increased. It is for this and other reasons a valuable crop in a rotation. Upon light soils it responds to applications of manures containing phosphoric acid and potash.

On account of its many sterling properties, it is desirable that its cultivation should be extended —Agricultural Gazette of N.S.W.

Breaking-in Farm Horses.

YOUNG farm horses should be broken in to the collar when they are about two and a half years old or a little older, and it is the general practice among farmers to break them in at this age. At two and a half years old a young horse has not nearly attained to its full development and strength, and is a long way off maturity. It is quite unfitted at this age to perform real hard work, on account both of its lack of strength and immaturity. The frame of the young horse is unable to stand much strain without injury, and to tax its powers unduly by demanding severe work from it is most injurious and spoils, if it does not ruin the young animal for the future.

When young horses are being broken in they must receive very considerate treatment, and every care must be taken not to overtax their strength in any way either by making them pull too hard or working them for too long a time. They should be accustomed to being worked in a most gradual manner, and the work must be light and easy, such as drawing light harrows or pulling the plough an hour daily during the first fortnight. It is a good plan to let the young animal have a whole day's rest at frequent intervals, and when it is thus rested for a day it is best to turn it out to graze but it must receive its usual allowance of grain at the same time.

When they are being put to work young horses require an ample allowance of grain in order to keep them in condition. It does not do to put a young horse on a big allowance of grain after it is taken up from grass and brought in to the stable to be broken in. As the animal is not accustomed to a grain diet, its digestion will be upset and digestive troubles will ensue if it is suddenly given much grain. At first only a small allowance of oats, say from 5 to 6 lbs, should be fed, the daily ration being gradually increased every two or three days until the full allowance is reached. Young horses whilst being accustomed to work should not be stinted in their ration of grain, and they ought to be liberally kept, as they have to make growth and development, and for this purpose they need plenty of nourishment. They have also to build up muscle, and there is nothing like oats for making muscle in a horse.

To break young team horses to the collar is an easy matter, and very little trouble need be experienced if the breaking-in process is carried out in a competent manner. The young horse ought to be accustomed to wearing a collar and carrying a harness, and also to having a bit in its mouth, before it is put to the plough or the harrow. Horses require to be taught what they have to learn by stages, and it is no use trying to make them learn everything at once and at the same time. It is here that a mistake is made by those who have to break in a colt. It seems so often to be assumed that a young horse ought to know without learning what it has to do and what it has not to do, but that is all wrong, and it is absurd to expect that unbroken horses shall take quietly to all the new things connected with the breaking-in process all at once and for the first time of asking. When a young horse gives any unusual trouble whilst being broken in it is in ninety-nine cases out of a hundred entirely the fault of the trainer, and it may safely be presumed that the latter is not carrying out the process in a proper manner.

When they are being trained young farm horses should be harnessed along with steady horses, whose temper is not easily upset by any unusual occurrence. It serves to steady the young one and to add to its confidence and docility if it has a quiet and docile companion.

The chief and practically the only thing in breaking in young horses is to avoid flurrying or exciting them in any way, and this can easily be done by gentle treatment. If the young horse is excited or flurried by rough treatment or by punishment, it is sure to cause trouble—excitement and nervousness being the chief reasons, as a rule, why young horses prove troublesome on being taught to pull. A badly-fitting collar is probably the only other cause besides excitement and nervousness which induces the young horse to become troublesome. It is the greatest importance that the collar should fit perfectly, so that it does not cause discomfort to the animal nor wring or hurt its shoulders, which often become more or less tender at first owing to the pressure of the collar against them. In order to harden the skin on them it is a good plan to bathe them with a solution of salt in water (or alum in water) when the young horse has finished its work for the day.

The farm horse soon learns to answer the reins practically of its own accord, and there is nothing much to teach it in this respect. The bit should be provided with a thick mouthpiece, as this is much more comfortable than a thin one, the latter being apt to cut and make the mouth sore. The bits on the bridles of farm horses are more often than not provided with too thin mouthpieces.

The young horse must be taught to obey the voice as much as possible, and it readily learns to do this in a short time. It is due to the phlegmatic disposition, and to the ingrained docility of draught horses that the breaking-in process is such an easy matter and causes so little trouble. But despite the natural docility and the quiet temper of a young draught horse, it will resent any rough treatment, and unnecessary punishment tends to spoil its temper and impair its docile behaviour.

There is, as a rule, no reason why the young animal should be punished, and it ought always be treated with kindness and gentleness.

Shelter v. Exposure of the Dairy Cow.

The dairy and animal husbandry department of the Kansas Experiment Station undertook to determine by experiment the loss that could be attributed to neglect by not sheltering the cow.

The relation of the comfort of the cow and the cash received for her products is one that every dairyman should study. Enough good food and pure water, shelter from heat in summer and storms in winter, kind treatment, are just the conditions man demands for his own comfort, and just what is due to every animal from every owner from an economic standpoint. The body of the cow, which is a complicated mechanism, is so constructed as to do its work best at a temperature of 101 deg. F. From this particular it might be well to compare her to the steam boiler, which requires more fuel and does less work if not properly insulated or protected from the cold.

Any marked deviation from the normal temperature of the cow indicates an abnormal or diseased condition of the body. This temperature is maintained by the generation of heat within the body itself, from the food that is eaten. The food serves as fuel, to be burned to keep the body warm. The body must be kept warm, but not too warm. When the air is warmer or as warm as the body itself moisture is brought to the surface, and the evaporation of this has the necessary cooling effect. It is essential that the body must be kept dry and comfortable.

When one considers the functions of food in the body, how it serves the cow, we find that it has a great many important uses: aside from being converted into a product we desire for the market, it keeps the machinery going and repairs the waste, and lastly, maintains the temperature. In following out the familiar law of conservation, which is said to be the first law of nature, these functions are conserved first, and if need be at the expense even of that product intended for the nurture of the young.

If, then, a profitable flow of milk is to be maintained, not only must the feed be supplied for its manufacture, but for those other necessities of the body which vary to meet the demands imposed by outside conditions. On several occasions some of the cows were exposed to a temperature ranging from 18 deg. to 50 deg. for several days at a time. A previous record was taken of the cows to get their approximate average daily production when kept in a comfortable shed. The milk was weighed, the test was taken, the amount of food, and the weight of the animal was determined. The experiment indicated a loss of 12 per cent. on the quality of milk and 11 per cent. on butter fat.

Light in the Stable.

To the absence of proper light in the stable may be attributed many of the diseases to which the eyes of horses are liable. It is easy to imagine what the animal must feel, and the consequences which are likely to be the result from our own painful sensations on issuing from a dark place to the full blaze of the sun. A repetition of this several times during the day would be inevitably attended with most injurious consequences.

A stable ought to be as well lighted as a house so that this source of injury may be avoided; and also that any want of cleanliness may be readily detected. In stables which have a proper quantity of light, the shutters may be partially closed when the animals have fed properly and lie down to sleep. Many animals stand too long on their limbs, and this subdued light is more apt to produce drowsiness, inclining him to repose, during which time the food is well known to have the most salutary effect in increasing the muscular fibre and the cellular and adipose substances.

Watering Horses.

Opinions probably differ more on the subject of water for horses than on any other part of their treatment, and owners, breeders, and grooms are never likely to agree as to whether it is better that they should be watered before or after feeding. This subject, therefore, need not be discussed here, but something may be said regarding the advisability of allowing a heated animal to drink copiously of cold water when he comes in from work. Of course there are no two opinions regarding the inadvisability of letting a horse drink much at a time when he is on a journey, but it is when the work is completed and the animal is hot that opinions differ. Some excellent authorities contend that a long draught will not harm a horse, but the majority entertain a contrary view; and it is always wiser to be on the safe side, and to avoid risks of colic or the horse overgorging himself with fluid. It may also be remembered that one or two or more short drinks—at intervals, equivalent, as it were, to human beings' short sips—are quite as effective quenchers of thirst as a very long one, and as there is danger in the latter and not in the former, it is well to pursue the safer course.

Twin heifers will breed, but a twin heifer with a bull seldom does.

A rough, noisy roustabout person in the cowyard is often a serious damage to the cows.

No sensible farmer can expect to grow a profitable crop by planting good seed in impoverished or unfertile soil. Neither is it possible to make horse breeding profitable by mating inferior mares with the best of stallions.

"When Danes went milking they put on white suits—cheap, certainly, but easily kept clean by washing. In New Zealand, on the other hand, people generally put on the worst clothes they had as overalls, and he had seen pants that would stand alone. The vital points he advocated were cleanliness, more care of the milk, and adequate dairy inspection. In Denmark they had expert veterinarians and inspectors going all over the country, visiting every farm at intervals of two or three weeks. If farmers would not voluntarily improve there were regulations to compel them to do so."—J. A. Kinsella, New Zealand Government Dairy Commissioner.

Sometimes farmers get it into their heads that they can carry on three or four kinds of business at the same time on the same farm. This is a mistake, and thousands have found it out when their pockets were empty and their health and strength gone.

The up-to-date dairyman, knowing himself to be part of the very foundation of this great industry of dairying, will not be found guilty of sending stale cream to the factory. He will at all times deliver his cream as clean and sweet as he used to bring his milk and as often. The reputation of Australian butter is at stake, and all hands should make a determined effort not to let the quality deteriorate, as thereby thousands of pounds will be lost to the milk producer, and perhaps the business made unprofitable to the factory.

Among the crying needs of the butter industry in Australia is better buildings, better sanitation and better equipment. Another, and not the least, is better and cleaner supply of raw material upon which to show our factory manager's skill in making a finished product.

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The Orchard.

Fruit Pulp.

G. R. Harrison, Tenterfield.

Once again we have to face the problem of caring for the various fruits, that we may enjoy them all the year round till the next fruit season comes in.

The man with a few trees, producing more than the family can consume immediately, but not sufficient to market; and the man near the market who can buy sufficiently at time of glut: and the producer, who has much that the market will not take, all want a method of keeping fruit on a larger scale than the ordinary preserving bottles permit of. All such will be glad to hear how I have, on three separate occasions, put down fruit in 4-gallon packages at cost in cash which was small, and at a cost of time, skill and labor, which even very busy people could afford.

I will describe how I put down quinces and peaches at the Orange Grove, while the guest of Mr James Metherell, orange producer and bee-keeper on the Colo River, some nine years since Seeing that much fruit was likely to be wasted, though Mrs Metherell had filled all available receptacles with fruit and jam, I secured all the obtainable empty kerosene cans, carefully melted off the circular cap and soldered up all other holes. To remove all traces of kerosene a few pints of dry dust (ashes or garden soil) were poured in and shaken up so that it reached all corners, and they were left in the sun, receiving an occasional shake now and then. In a couple of days this was poured out, and the tins were washed with cold water just to clear out the dust; they were then ready. My first batch was peaches; they were picked over, stalks pulled off, but were neither peeled nor stoned (they would probably have been better peeled, but all stone fruits improve in flavor if preserved with the stones in them). They were placed in a boiler, and as little water added as they could be boiled with, and as soon as cooked they were lifted with a dipper and poured through an improvised funnel — simply a piece of tinned sheet about the size of the head of a kerosene tin (which probably it was) rolled in a cone and cut off so that it would just about fit the holes into the cans. The cans were stood on a sloping board, so that the corner with the hole in would be the highest point. This allowed the cans to be well filled, and yet the fruit was clear of the edge of the opening, which was then wiped clean and dry, and the caps which had been taken off were soldered on again, and the whole process was complete.

The cans were then removed to a cool place—underneath the house is where I have stored them mostly—and there left till wanted. As the fruit cools the sides of the cans are drawn in, and this assures you that the tin is air-tight; if the sides bulge out much at any time you may be sure that there is a leak, and that the fruit is fermenting. I have put down some thirty cans of various fruits in different years and places, but have not had a tin go bad, and many were kept for two years.

When a tin is opened, the contents may be made into jam or heated up and poured into ordinary preserving bottles and kept till wanted.

I have found that it takes about 1½ times the full of a kerosene tin of the fresh fruit, before boiling, to fill a can with the pulp—say, a kerosene case three parts full.

Some people may be afraid they cannot use the soldering tools, but they need not fear, it is very simple. The tools and material required are a proper soldering bolt. about 3d worth of spirits of salts, and about 6d worth of tinman's solder, a few bits of clean tin sheet for covering holes knocked into the cans for the purpose of emptying them. A small pair of tinman's shears, say 8 or 9 inches, are very handy.

How to Solder.—First clean the parts of the copper bit of the soldering bolt with an old file, and heat it in the fire till it just begins to change color. Have a vessel, an empty jam tin will do, half filled with water, and drop into it six or eight drops of the raw spirits of salts, also have a glass or delf vessel and pour into it about a table-spoonful of the spirit and twice as much water, and into this drop small pieces of zinc, the liquid will commence to boil furiously, giving off pure hydrogen gas, and will eat up the zinc; keep putting in the zinc till it will eat no more, when, instead of hydrochloric acid, you will have a solution of the chloride of zinc. This is your soldering liquid, and may be laid on the parts you wish to solder with a brush or feather, or even a bit of cane or stick with the end bruised. When the bit is hot enough to begin to color, put a little piece of solder on to a piece of clean tin and put a little of the soldering liquid on to it. Dip the point of the bit into the acid water in the tin for a moment, this cleans it, and put it on the little piece of solder on the piece of tin. This should melt and spread over the cleaned point of the bit and over the tin; this is "tinning the bit." You may now put it into the fire and make it a little hotter, but do not make it too hot or you will burn it—that is, you will fuse the copper and the tin of the solder together and make bronze, and this will not work well and must be ground off, and the operation of tinning gone over again. Cut little bits of tin and lay them over any holes to be closed; apply the soldering liquid, put a bit of solder on top and lay the tinned point of the bit on it, and keep it on till the solder is melted and has run down around and under the little patch of tin. Always keep the bit on till the solder has adhered well to the tin. It is well to run plenty of solder into the groove around the opening of the can, when it will be much easier to solder on the cap when the fruit is in.

I trust that this year many farms and orchards will have some dozens of cans of pulp of various fruits, besides the usual amount in bottles and in jam.

The cans with slip in lids, used by bee-keepers for honey, can be made quite air tight if the lids are pressed well down and wax or mineral wax (paraffine) run in while the tin is hot.

To recapitulate, the steps in the process are, First, procure and prepare cans, then procure and prepare fruit, and boil with as little water as convenient. It will take about 6 gallons of the uncooked fruit to fill, when cooked, a 4-gallon pan, but if you have cooked fruit enough over to partly fill a can, it is all right to keep that partly filled can hot till more fruit is cooked to fill it: fourth, fill into cans while boiling hot and solder down at once; fifth, store in a cool place.

[Care should be taken when buying solder to obtain a suitable grade; this material is made of varying quantities of lead and tin and sometimes bismuth. At the Wagga Experimental Farm the solder used in the cannery is made of equal parts, lead and tin; this flows freely and does not take a great heat. A solder used for canning that is very good for many purposes, because it melts at a low temperature, is made as follows—Lead 1¼ lb, tin 2 lb, bismuth 2 oz. The lead is melted first, the tin is added next, and finally the bismuth stirred in well just before pouring. With a low melting point such as this, viz., 340 deg. F., caps of pulp fruit-cans can be removed without having recourse to tin-openers or worse, thus damaging the can.—Ed. Agricultural Gazette of N.S.W.]

Keeping Ripe Fruit

Interesting Experiments.

Some very interesting experiments have been tried in England to determine the effect of the use of formalin as a preservative of ripe fruit.

The following comments appeared in the British Journal of the Board of Agriculture—

Pasteur proved that the rotting or fermentation of ripe fruit was due to the presence of bacteria on the skin or rinds. From this starting point it was inferred that if these organisms could be destroyed, the period during which such fruit might be kept in perfect condition could be considerably prolonged, and a series of experiments conducted in the Jodrell Laboratory at Kew (London) have proved the inference to be correct.

The fruits experimented on were ripe cherries, gooseberries, grapes, pears, and strawberries. The fruit was not selected but purchased from shops, or in some instances from vendors in the street.

The following table shows the number of days during which the fruit after special treatment remained perfectly sound, after a similar quantity of untreated fruit from the same lot had become mouldy or decayed—

Cherries	7 days
Gooseberries	7 days
Grapes	4 days
Pears	10 days
Strawberries	4 days

The above table applies in all cases to fruit that was perfectly ripe when experimented upon, but it was ascertained that if fruit is treated before it is ripe, it is equally well preserved, and the normal course of ripening and the flavor are not in any way interfered with, as is the case where fruit is kept for some time in a refrigerator.

It is suggested that the treatment will be particularly useful in connection with delicate tropical fruits, which are specially liable to early decay. Apples and citrus fruits would also repay treatment.

The simple, inexpensive and harmless treatment is thus described—

In the case of fruits where every part is eaten—strawberries and the like—there should be immersion for ten minutes in cold water containing 3 per cent. of formalin (which is equal to 40 per cent. of formalde-hyde). On removal the fruit is immersed for five minutes in cold water, and afterwards placed on wire netting or some similarly open material to drain out dry.

When the fruit has a rind or skin that is not eaten, the immersion in cold water after treatment in the formalin solution can be omitted with advantage.

Various other preservatives were tested, but when all the requisite points—efficiency, ease of application, cheapness and absolute freedom from danger arising from its use, were taken into consideration, formalin stood first.

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Choice of Breeding.

In selecting a breed of fowls be sure to get the breed you like the best; it matters not what breed you have, if the fowls are properly fed and cared for, they will be a profitable investment. It is well to bear in mind the fact when selecting a breed of fowls that feed is more than breed.

There is no ironclad rule that can be laid down for the feeding of poultry. Different breeds of fowls, kept under different conditions and in different climates, require entirely different systems of feeding. The man who tells you that he has a formula for feeding hens that will give good results at every time and place, has something to learn yet, unless his formula is something like this: Feed a little of everything, Feed enough but not too much, Feed regularly.

Variety in feeding is important, and there is little sickness among fowls that are well housed and properly cared for. Be sure to keep plenty of pure, fresh drinking water constantly before the fowls. The egg is composed of 73.7 per cent. water, or in every 10 lbs of eggs there are 7 pounds of water. This statement is conclusive proof of the importance of an abundance of pure drinking water.

For success, cleanliness must always exist in the poultry quarters If the houses and runs are not kept clean disease and vermin thrive. One of the worst diseases the poultry man has to contend with is roup, and this disease is the direct result of wet or damp quarters and a draught through the house. Cholera is another bad disease that comes almost entirely from dirty, filthy quarters and can be overcome or eradicated by thoroughly cleaning the houses and fumigating them with tar and sulphur. Lice and mites are sure death to poultry once they secure a hold, but they can be avoided if cleanliness always prevails.

The fowls drinking water and vessels generally receive much less attention than they should. Fortunately for both owners and fowls, many of our progressive farmers are beginning to realise the fact that fowls compelled to drink manure water, the water collected in mud puddles and similar places, will not pay a very large profit, and they are beginning to pay more attention to this very important but much neglected duty.

Diseases are frequently communicated from one fowl in a flock to another through the medium of the drinking water. If a bird has the roup, or even a severe cold, the discharge from the nostrils will contaminate the water, and when the other fowls partake of the water they also are liable to become affected with the disease. A sick bird should be removed from the remainder of the flock to some isolated place, but there are times when the presence of a sick bird may not be known, and for that reason, if for no other, the drinking water should be changed once a day, or oftener if it can be done conveniently.

When fresh water is given it should not merely be added to that already in the vessel, but all the old water should be thrown away and the vessel thoroughly cleaned before putting in the fresh water. The vessel should be scalded out with boiling water once a week at least, and if a few drops of carbolic acid are added to the water with which it is scalded so much the better.

Grit.

The fact that fowls require grit in order to digest hard grain is frequently overlooked by poultry breeders. The work of reducing and grinding up whole grain in the case of fowls is principally performed by the gizzard, an organ which is provided with strong muscles for this purpose. Unless some grit or small pebbles or gravel are present in the gizzard to aid in the grinding up of the grain, the process goes on imperfectly, and in a very slow manner, much slower than should normally be the case Inability to procure a sufficient amount of grit to meet their requirements on the part of hen or chicken's results in digestive disturbances being set up, and the food, that provided in the shape of whole grain, not being properly assimilated. In some cases lack of grit may prove fatal,

On being swallowed the food is conveyed into the crop along the gullet. The lining membrane of the crop secretes certain digestive juices, which to some extent soften hard grain whilst they permeate soft food. From the crop the food is passed through the lower portion of the oesophagus into the proventriculus which represents the stomach. This secrets the gastric juice, which becomes mixed with the food, the latter then entering the gizzard, whose office is to grind up the softened grains as described above.

It is obvious that food in the form of finely ground meal will require but little or no grinding, while hard grain and seeds, such as wheat, maize, barley, peas, etc., although softened, are still in a whole state until they have been ground up in the gizzard; from this the food travels into the small intestine, and thence into the large one, the undigested portion finally reaching the rectum, and being excreted,

Besides fowls all other domestic poultry, such as turkeys, geese, ducks and guinea fowls require grit for the proper digestion of food. Similarly all wild birds, especially those which feed on hard grains, have need of this material.

Fluctuations in the Butter-Fat Percentage.

Farmers are continually complaining of factories giving them inaccurate readings; low readings of butter fat in the cream, and some are tempted to say that there is something very wrong at the factory or cream testing depot: that mistakes are being made, and they want an explanation. Fluctuations undoubtedly take place in the percentage of fat. One day the per centage is 35, the next day it is 37, the next day perhaps it is 41. Who is responsible? Whose fault is it?

Begin at the commencement, the cow.

Suppose the farmer has a dozen cows. He separates the milk, morning and afternoon. One day the temperature of the air is very high, agreeable to the formation of milk. At night it is also high. Next day the temperature goes down, so that you find a marked decrease in the quantity of milk, and a marked decrease in the percentage of fat contained in that milk.

Again, cows are milked at regular hours, say for three days, then there is a change, the milking hours are irregular. That makes a difference in the weight of cream and the per centage of fat.

Further, the twelve cows are chased (accidentally or otherwise) into the milking bail. The man on horseback has a horsewhip or couple of dogs. There are nervous cows in that herd of twelve; the result is a decrease, a fall in the weight of milk and in the percentage of fat.

Further, the milk is not always separated immediately after it comes from the cow. The temperature has gone down, and a loss takes place through imperfect separation.

Again, we find the separator exceptionally clean to-day, the next day not quite so. If the separator and all its parts are not scrupulously clean it is impossible for that machine to skim the milk clean. Again the result is a loss of fat. Perhaps the cream is kept at a high temperature on the farm, You have a degree of acidity. It is then put into the train. When the cream arrives at the factory, what do you find? Little grains of butter have formed here and there; the factory manager stirs the cream, but the reading of the sample he takes is inaccurate.

There you have conditions altering from day to day. All these and a hundred other causes have a fluctuating tendency upon the cream or milk, and until the farmer studies the whole thing carefully and experiments continually he will never make dairying the success it might and ought to be.

A too tight house is worse than none. In cold weather the birds get a chill every morning when they come out into the cold outer air, that the birds roosting in the trees never experience. All the same, don't let your birds roost in the trees.

Separate Pens for Fattening.

Fattening pens can be easily made out of ordinary packing cases, from which the top and one side have been taken, or from ordinary hen coops. They should be put on legs not less than 2 feet high, and the bottoms of the coops or boxes should be made of one and a half inch slats (slating laths do excellently) nailed across so as to allow about two inches between the slats. The front of the pen will be similar to that of an ordinary hen coop, and should have a hinged door or sliding opening so that birds may be easily put in or taken out. Not more than six birds should be put into one coop, and there should be only just room for them to feed comfortably.

The birds should be placed in the coop at night, being first given a fair meal and some drinking water. They should not be fed again for 36 hours, as it is well to allow their crops to become quite empty before they be fed in their new quarters. Unless so starved the birds, especially if taken from a large flock, are apt to pine and lose condition seriously. For the first day or two they may be given just a little green food, but this must soon be discontinued. Unless the coop can be placed in a shed, a sack should be hung in front of it at night to prevent the birds catching cold; this should also be done between meals, as exclusion of light induces sleep, and the birds consequently lay on flesh more quickly.

The space underneath the coop should be thickly covered with ashes, and all droppings should be raked out and taken away twice a day. The utmost cleanliness must be observed, or birds will lose rather than gain in condition and weight.

Two pieces of wood should be nailed to the outside of the bottom of the coop to project upwards. On these a wooden trough may be placed at meal times, but it should be taken away directly after the birds have finished feeding, and after removing any food which may have been left, it should be rinsed out with cold water. Twice a week this trough should be thoroughly scoured out with boiling water and a hard brush.

The food given to birds while undergoing the process of fattening should be fed in a liquid state, like thick soup, and a little grit may be added with advantage. If the birds appear to dislike their food give them a change, for on no account must they be permitted to go off their food.

Bantams are Useful.

Where one has only a small yard bantams are very useful. They are sprightly little fellows which bear confinement, and a dozen hens may be kept continuously in a yard not more than ten feet square.

They are very small feeders, and that number of hens will keep in healthy condition with only the scraps from the table.

Their eggs are almost as large as some of the leghorns, and they will lay about a 100 a year.

Of course they are too small for table fowls, but they certainly make themselves useful in furnishing fresh eggs for those who have no yards large enough for other breeds.

There are several good kinds, but the most popular are the black-breasted games, which are both handsome and profitable.

A small dry goods box will serve for their house and they will pay their way at all times.

Sheep in the Orchard.

o o o

A correspondent says—"The greatest value of sheep in an orchard is found probably in their being used as a means of fertilising orchards that are bearing. If put in the same somewhat early in the spring and fed a suitable supplementary food with the grass which the orchard may furnish, it will be found that the sheep will thus convey fertility to the land, and they will do so in a marked deg. if fed on right kinds of food. Such foods may consist largely of wheat bran, which is in itself a valuable fertiliser. It may be wise to encourage the sheep to eat it freely, to add a little grain in the form of oats. A little oil cake will also improve the food. The droppings thus left in the orchard will tend very much to its enrichment. The outcome will be that where this system is persevered in during considerable portions of the season, the orchard will thus be provided with a liberal application of fertility. This statement is based on the supposition that there is some proper relation between the number of sheep grazed and the area of the orchard."

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The Australian Gardener

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Roses—Insect Enemies.
The Orchard—
Plums and Peaches.
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Vegetable Experiments in Texas.

The Poultry Yard—
Raising Poultry for Profit
Information about Eggs
Keeping Poultry Healthy
Raising Turkeys
Beware of Carbolic Acid
Etc. Etc.

THE FLOWER GARDEN.

Horticultural.

NOTES BY THE OBSERVER.

AMONGST the most prominent flowers at present are antirrhinums, balsams, amarants, celosias, carnations, convolvulus, coreopsis, dahlias, delphiniums, erythrinas, bouvardias, gladioli, hollyhocks, gomphrenas, lilies, sunflowers of all sizes, cosmos, plumbago, phloxes, pentstemons, portulacas, petunias, zonale pelargoniums, pansies, statice, russellia, tagetes, tecomas, verbenas, zinnias. These and all others require a good deal of water to produce the best results.

The best way to apply water is in trenches about 3 inches deep, which should be kept filled for some time, so that the water can soak in, and then refilled with soil. The next best way is to apply frequently with the whirlijig, but it is rather wasteful.

Sow seeds of all kinds of hardy annuals and perennials in nursery beds for early planting when the first heavy rains occur. These must be raised in nursery beds, because birds, slugs and many other enemies of plant life would prevent the young plants becoming large enough for use. The birds scratch up the seeds at once when sown out of protection, or they will eat the germs directly they come through the surface. Slugs and snails devour the plants from first appearance until they are in flower.

Drought, heat, wind and other causes prevent rapid growth of young plants in the open beds, and it requires no end of time to go round and water them as they should be watered. In the nursery bed all this risk and trouble is minimised, therefore grow everything in nursery beds.

Plant anemones, crocus, gladiolius, hyacinth, iris, ixia, narcissi, ranunculus, tulips, sternbergias, and numerous other bulbs, tubers and roots for early flowering. A little sand should first be thrown in where the bulb, etc., is to lie, then the root should be put in and covered with a little sand, then soil put on. True bulbs should be buried with their own length of soil above them. Ranunculi and anemones should be soaked 24 hours first, and then covered with one inch of light soil.

Cyclamen should be only half buried in similar soil, and gladioli just barely covered.

Sandy soil, with plenty of decayed vegetable matter, preferably very old manure from a cowyard, is best for all this class of plants.

Old clumps of babiana, lilies of a hardy nature, snowdrops, snowflakes, ornithogalum, oxalis, amaryllis, crocus, tritonia, arums, Richardia, etc., should be taken up, divided and then replanted in fresh places.

Everyone with a garden wlll purchase seeds from a seedsman, and every seedsman gives away a catalogue of the best varieties, with a description of colors, heights, and other particulars—many new varieties are also described—therefore it is useless taking up space here to enumerate particulars which can be secured in a compact form from your seedsman.

Plant out any remaining autumn annuals, or purchase some at the seed shop if none available at home.

Many annuals will make fresh growth and produce second crops of flowers if they are cut back a little. Most plants will do better and yield new flowers if the old ones are cut off directly they are fully expanded. If verbenas and petunias are allowed to run at will they will run right out and die. It is usual either to peg the runners down and cover the pegs with soil, when roots will be produced in a fortnight, so that the pieces can be removed to fresh spots; or the plants are cut back to the bud or piece of young growth nearest the roots, when a fresh start is made. This layering should be done when the plants have more than 18 inches of growth on them, even if covered with bloom.

When annuals become old and scraggy it is well to remove them, as they may scatter seeds which will cause trouble later on. Seeds of such that are worth saving can be secured from a few of the very best plants.

The seeds of perennial plants, especially our natives, should be gathered and laid on large sheets, when they will expand in a few days and the seeds can be shaken out.

Seeds of hakeas, eucalypts, calothamnus, casuarinas, melaleucas, callistemons, proteas and similar plants are worth saving for exchange or sale, provided the name of species and variety are appended.

A lot of weeding can be saved in the future by adopting preventive measures now. Manure the spare ground at once, even fresh from the stable, if none other is ready. Dig this in and mix well: then water regularly and bring all the weeds up. When the bed is wanted for the seedlings now being raised in nursery beds, dig all the weeds under, work the soil into a perfect condition, and plant out, with a certainty that there will be very few weeds to cause trouble.

Evergreen plants may be cut back a little if they are too rampant.

* * * * *

Roses

can be budded when the sap is rising freely in both stock and bud plant. Sap can be forced to rise by liberal watering a few days previously, and better results can be secured by liberal use of very old manure from a cowyard.

A week after budding the ties should be loosened, else the growth will probably be strangled by the bandage. Cotton wick is the best for ties or bandages, because it keeps cool and slightly damp whilst raffia or bast is dry and hot.

Suckers will arise from roots and stem of roses that have been budded, but these should at once be removed. The stems of standards should be protected against the afternoon sun, else the bark will be burned. Buds should be inserted close to the stem, else the new growth may be removed when cutting back at the end of the season.

ROSES.

Insect Enemies.

(By C. French, F.L S., F.E.S., Victorian Government Entomologist.)

White Scale.

A white scale insect infesting the rose, raspberry, blackberry, currant, and other members of the same orders of plants. Male, winged; colour, light amber with dark, irregular markings, wings white. Female, wingless, eggs red colour, form oval. and from twenty to fifty under each scale. This serious pest of the rose is one which, if not well looked after, will not only render the plant unsightly, but will kill the latter outright, so that, as in the case of most of our insect troubles, the spray pump must be kept going. Upon the first indications of the presence of this scale, cut the plant as hard back as possible for the time of the year. Get a nailbrush or something [illegible] the kind, and after having burned the prunings, proceed to scrub the thicker shoots, using either a resin compound, kerosine emulsion, or even nicotine and soap boiled together, and with this give the woody parts a hard scrubbing. For the weaker shoots, spray with a well-diluted resin compound or soperine. If the plant be badly affected, take it carefully up during the months of either June or July, cut it back, then immerse the whole plant for 24 hours in a solution of tobacco water. Give the plant stems another good scrubbing, and after disinfecting the soil with some lime, or, better still, muriate of potash, replace the plant, and watch it carefully for a time. The white scale is not easy to stamp out, the great secret of success being to constantly watch the plant, and if the slightest traces of the scale be visible, act promptly.

Loofer Catterpillars (Geometrid Moths, Several Species),

The so-called "loopers" are larvæ of small moths, the name of looper having been given to the catterpillars on account of their looper-like attitude when in motion. The female moth deposits her eggs upon the young bud of the rose blossom, and, when hatched, the tiny grub at once commences to bore into the bud. If not at once noticed, the blooms so attacked are done for. The geometers belong to a group of Lepidoptera largely represented in Australia, and included amongst them are many of the worst of our "leaf-roller" pests so well-known to the rose-grower. Spray with either white hellebore, weak Paris-green, or nicotine.

Red Spider (Tetranychus Telarius).

This well-known pest of growers is not, strictly speaking, an insect, as it belongs to the great group of acarids or mites. Still, I have considered it of sufficient importance to include in this article. The red spider is one of the most troublesome and, in some cases, one of the most destructive of pests, the eggs remaining both in the soil and on the plants during the whole season. The tiny animals. when full grown, are red in colour, hence their title. Deterrants are here again in evidence. When the foliage is firm, spray with either quassia, hellebore, or a weak kerosine emulsion. When spraying keep a full strength solution for the soil, as upon examination, especially if the soil be a heavy one, myriads of the tiny beasts are to be found in it, and there remain until the the late spring, when they sally out for their work of destruction. Where it can be judiciously done, keep the hose and syringe going, as once the "spider" tackles the foliage, it soon spoils the latter's beauty. The red spider must be kept at in the early stages If the "web" be once formed it is most difficult to destroy the pest without much injury to the plants themselves. Spimo, a great home remedy for spider on hops, might with advantage be tried here on roses as well as on other plants.

Rutherglen Fly (Nysius s.p.)

This is a small but formidable pest of the rose grower. It is one of the tiny species of plant-bugs, and is one of the worst of our all-round insects. The perfect insects are winged, and are to be seen in countless millions. When they settle on a rose bloom they at once commence to drive their beaks into the petals, and then the whole of the nourishment required to form the perfect flower is sucked out, the buds being left on the plant, shrivelled, blackened and dying. As these insects congregate in rubbish it is desirable to mulch the roses with grass, and at daybreak remove the mulching bodily and burn it The crevices in the soil are also great harboring places for this pest. The soil should, therefore, be sprayed with a strong (1 in 8) kerosene emulsion. When the pest makes its appearance it must be tackled at once, and always either in the morning, before the sun gains power, or after dusk. In the case of roses it will be difficult to use any material strong enough to kill the insects without damaging the tender foliage of the rose. Smoke fires, although successful, is but a half-hearted way of dealing with the pest, for instead of destroying the insects, you drive them on to your neighbour's property, where they hibernate until the following season.

The Rutherglen fly is a hard nut to crack, and will look at the ordinary treatment meted out to insect pests as merely in the light of a huge joke, and will even thrive upon a spraying with undiluted fusel oil. I find, however, that the beast does not like either quassia chips or pyrethrum insecticides, so I would recommend these materials as worthy of a trial.

Light Brown Apple Moth (Cacæcia Responsana).

This small but very destructive moth is next to the codlin, our most dangerous insect pest of the apple grower. The perfect insect is yellowish brown, the grubs being not unlike those of the codlin moth. As in the former species alluded to, the eggs are deposited upon the face, also in the folds of the rose petals, and the grub, when hatched, eats into the bud, thereby causing it either to fall off the tree or is otherwise rendered useless.

In the case of this pest deterrents should be used, and for this purpose the pyrethrum insecticides dusted on the young flower buds are very useful. Occasional sprayings with a weak (1 in 20) kerosene emulsion has also been used by many with much success. This moth frequently deposits its eggs about dusk and early in the morning, and owing to the great damage it does is well worth watching. I have seen a dozen or more buds ruined in a single night, and as the trouble is not at once noticeable, it will be seen that careful observation and prompt treatment are necessary to attain success.

Mealy Bug (Dactylopius).

The Mealy Bug of gardeners is a great pest, especially as it attacks the roots as well as the branches of the plant, and will be quite at home in soil of any kind, especially heavy soil. This pest is more troublesome to persons who force roses. either in pots or in tubs. The bug does not appear to do much harm to roses when they are planted out of doors. When this insect appears upon the plant above ground, spray with kerosene emulsion, and in spraying for this pest especially the liquid must be forced on to the plant with as much force as is consistent with the constitution of the rose that is to be treated. When the bug is on the root of the plant disinfect with either bisulphide of carbon placed in the soil by means of an injector, or sulphate of iron. In planting roses on old and used land, great care must be taken to treat the soil befere planting with some muriate of potash, which is almost a specific against peach aphis when at the roots.

Cut Worms (Euplexia Nigerrima and others).

Cut Worm is a terrible pest in rose gardens, the habits of the parent mother being mostly similar to that of the preceding species. The larvæ or grubs are of a dirty greenish brown colour, and are fairly active when at their work of destruction. This grub is a most voracious feeder, and will ruin a large number of rosebuds in a very short space of time. It will also attack the leaves

The moth of the species here named is black with a few white markings. We have reared it from the rose and the carnation buds. Other noctuid moth grubs will also tackle the rose, but this is, I fancy, the worst species for florists' flowers.

Spray with white hellibore or nicotine. good plan is to mix bran, arsenic and treacle together into a paste, and at dusk lay pieces here and there amongst the plants.

Formula—50 lbs bran, 12 lbs arsenic, 6 lbs treacle.

Stick Case Moths (Metura and Entometa).

These insects, whilst in the larval state, are a great trouble to growers. A very few of the grubs, with their singular stick nest, will soon make short work of the foliage of a rose or any other plant which they select for attack.

The perfect insect is a small moth. The female is quite destitute of wings. It both makes and inhabits the case above mentioned. The males, although common, are but rarely seen, and are best captured by means of placing a female under a wire meat cover or a sieve, and in this way they are easily attracted.

As an illustration, I may say that for nearly 50 years I have been collecting insects and have only secured two male specimens of these moths in the ordinary way. Fortunately these grubs are easily destroyed. and a few applications usually suffice for that purpose. Take 1 lb Paris green (paste form is the easiest), 4 lb lime, mix and dilute for most plants, say a gallon of the mixture to 160 gallons of water. The grubs being leaf eaters are at once poisoned by the material sprayed on to the parts affected.

In the case of roses, it is seldom that the grub attacks the foliage until the latter is well ripened, so that the mixture can be used at a fairly strong rate. There are a few other and smaller stick case insects which go for the rose, but these are not sufficiently numerous to do any considerable damage.

Jassid (Jassidæ),

We now come to a tiny green cicada beast, which for its size, bids fair to become one of the rose growers' worst pests; at least, when the plants are in bloom. This insect puts in an appearance in the hottest weather, and similar to the Rutherglen fly, simply swarms on the leaves as well as on the blooms. Comparatively this insect is of recent introduction as a garden pest, although it is supposed to be a native of this State. The group to which this insect is allied contains some of the most extraordinary forms of all insect life. Let us hope that this beast may soon go hence. Deterrents in the way of quassia, hellebore, emulsions of all sorts, and also care as to the manure used, will have to be adopted. Trapping should be done soon after daylight, or after the sun has lost its power.

THE ORCHARD.

Plums and Peaches.

(By F. A. Waugh and G. O. Greene, Massachusetts.)

Reports are here given on plums and the pruning of peach trees.

The report on plums deals principally with the behaviour of a large number of varieties grown at the station. Bradshaw has proved one of the best of the Domesticas grown, while Burbank, of the Japanese sorts, has proved the most profitable and productive market plum at the station.

Experiments were made in marketing plums in 3-lb baskets, such as are used for grapes. This proved a satisfactory package, as it furnished about the quantity of fruit desired by most purchasers.

Plums for canning were packed in Jersey peach baskets holding 16 qts: this proved satisfactory, cheap and convenient. Most markets were found not to be fastidious with respect to the form of the packages used for plums, and any small meat basket or box will answer if the fruit is of good quality and well packed.

In pruning experiments with peaches one row has been left for 9 years without pruning. These trees are quite open-headed and have generally assumed a vase form. The lower part of the main branches is bare and the fruiting wood is sparse, weak and high up in the trees. The trees are much less thrifty and vigorous than pruned trees of the same variety. As a result of this lack of vigor a number of trees succumbed to the cold during the preceding winter.

A row of trees next to this has been headed back moderately two or three times, as a result of which they are thick topped, with a good deal of feeble, sappy growth on the inside. The annual growth, however, has been much more vigorous and the health of the trees better than those not pruned. More and stronger fruits buds have also formed. The main fruit branches are shorter and stronger and more capable of sustaining a large crop of fruit. The experiment is believed to show conclusively that the best form of peach tree can not be secured and maintained without pruning.

During the past three years a special experiment has been made in heading back peach trees in the spring. The conclusion reached relative to this system is that "the heading back of peach trees in early spring is good practice and in all cases advisable: in this pruning from one third to two thirds of the wood of the previous year should be removed," depending upon the number of living fruit buds on the one year old wood. When from any cause there are no fruit buds advantage should be taken to cut back with comparative severity. Only in extraordinary instances should the cutting extend back into two or three year old branches.

Some experiments were made in summer pruning peach trees. With early spring pruning it had been noticed that many feeble and useless shoots grew in the centre of the tree. It was thought that if a considerable quantity of the new leafy shoots on the outside of the tree were removed, thus admitting a reasonable amount of light to the inside of the tree top, some benefit might result.

"In no case were the results of this treatment convincing. The formation of strong shoots with fruit buds on the interior branches was never visibly promoted The outside branches which were allowed to remain seemed to profit somewhat by the removal of their crowding neighbors, and this was apparently the chief benefit derived from the experiment. On the whole, it does not seem to us that this practise is to be greatly recommended."

Cutting back the young growth of the outside branches to correct overgrowth did not give satisfactory results. The stopping of the growing shoots was usually followed by the pushing out of side buds and shoots lower down which were nearly always too weak to set good fruit buds.

Considerable winter injury was sustained by peach trees in both 1903-4. The damage was not serious in 1903, but in 1904 the trees were seriously weakened by freezing and some were killed outright. In treating the injured trees one block was left entirely without pruning, another was pruned in midsummer after the trees had started; a third was cut back from two thirds to three fourths of the previous year's growth, and a fourth was headed back near to the trunk, only the stubs of the main branches being left. The following table shows the results—

Effect of Different Methods of Pruning from Peach Trees.

Method of Pruning.	Total number pruned.	Living autumn of 1904.	Dead autumn of 1904.	Living
Trees unpruned ..	121 ...	113.0 ..	8.0 ..	93
Moderately cut back	48 ..	47.5 ...	.5 ...	99
Severely cut back ..	68 ..	55.0 ..	13.0 ..	81
Cut back to stubs ..	46 ..	24.0 ..	22.0 ..	52

While a large number of the unpruned tress lived, the growth made by the headed-in trees which lived was much better than that made by the unpruned trees. It was the judgment of many who saw the trees that the ones moderately cut back showed the best growth and were in the best condition. The experiment is also believed to point out that trees seriously weakened by freezing should not be cut back close to the main trunks.

Young hedges will do best if the growth is interlaced or plaited with adjacent plants, instead of cutting back in the usual way. This causes a dense green growth right down to the ground, and the intertwining strengthens the hedge so that boys and pigs cannot get through.

Cut the tops of chrysanthemums a little to cause thick growth lower down, remove weak shoots, give liquid manure and plenty of water at the roots. If the plants are not topped they will flower too early, and their value as latest flowering plants in autumn will be lost.

Hollyhocks, dahlias, foxgloves, gladioli, tuberoses, pentstemons, carnations, antirrhinums and many other tall-growing or feeble-stemmed flowers are likely to be ruined by the wind just at the time when they are well developed. They should all be secured to a stake or other protective device, and protected to the top, else the wind may bend the highest part against the string, and cause the very disaster against which provision is attempted to be made.

Origin of Luther Burbank Production.

The Burbank plum was a direct importation from Japan.

The crimson winter rhubarb was imported to America from Australia.

The sugar prune is a seedling of the prune d'Agen.

The crimson California poppy was obtained by selection from the California poppy.

The "improved" everlasting flower was obtained from the star flower from Australia (Cephalipterum drummondii). This flower "has undergone selection for size and color of its paper like bracts, until they have become large, rosy within and white without, and have stimulated structure and texture of artificial flowers to an extent that manufacturing milliners talk of its use by the million as serving the same end with much more grace and less cost than their cloth-and-wire creations."

The Wickson plum was produced by crossing Burbank and Kelsey. The stoneless prune was obtained by crossing an European species, "which has never been of horticultural value," with the French prune, followed by selection.

The Shasta daisy was obtained by combining the moon daisy of Europe, the ox-eye daisy of America and a species from Japan and selection.

The spineless cacti has been evolved by hybridisation and selection between five species of opuntia.

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Prize Essay

OF THE

Burnley School of Horticulture

BY E. M. ROLLAND.

Subject: "The Most Common Causes of Irregular Bearing and Imperfect Development of Tree Fruits and their Remedies."

In the world of to-day a progressive evolution is taking place, where only the most capable are allowed to stand, the slow and uninitiated are left behind. As with other things, the science of fruit-growing is rapidly forging ahead, and only the best and most payable methods are in use. The time has been when many, failing utterly to comprehend that any knowledge was required, attempted to grow fruit without understanding anything about fruit trees, or about soil, or climate, or disease. The result was utter failure, and so the idea spread that fruit growing was not a paying concern. Fortunately there were others, who had knowledge, and so were able to get good returns from their orchards. But to-day knowledge is more prevalent. Fruit-growing has become a science worthy of being thoroughly studied, and people have begun to realize that it is no use trying to grow fruit without an adequate knowledge. Following on added knowledge came added economy, and so trees that do not give back a proper return for their size and age, must either be thrown out or treated so that this defect may be remedied as far as possible. This brings us to the subject of this essay, "The most Common Cause of Irregular Bearing, etc."

Healthy Trees Fruit Regularly.

When a tree reaches the fruiting stage it ought to bear, and go on bearing systematically, till the weakness of old age is reached, when its paying life is done. But if the tree instead bears sometimes heavy crops, and sometimes none at all, or if it only fruits well on one side and grows very inferior fruit on the other, this is just the kind of tree that we cannot afford to give room to in a well-planned orchard. Some time ago the only thing to be done was to pull it up and throw it on the rubbish heap, and plant a new one, for often the cause of this irregular fruiting was unknown. But now the most common causes are known, and it only remains to apply the right remedies. We can now list the most important of these causes, and point out the remedies for each case.

Systematic Pruning a Necessity.

The most common cause of all is want of pruning, or want of sufficient and correct pruning. It is not at all uncommon to meet people who tell you that their fruit tree bears very heavy crops, and they boast perhaps that they took so many cases of fruit from it that year. When you ask them about the next year, they tell you that they do not expect much fruit then, but the year after that again there will be another good crop. That may do for the amateur, but it will not do for the professional fruit-grower, who must have a regular supply of fruit each year. The effect on the tree will be hurtful It will tend to curtail the life of the tree, and cause such exhaustion that it has to "lie fallow" for a season, because it has not the strength to put forth new healthy wood to bear flowers and fruit for the following year. These heavy crops, too, are very apt to break the branches and throw the tree out of form. Proper pruning will prevent this by allowing the tree to bear just sufficient for its strength, so that when next year comes the tree will not have become so exhausted as to be unable to bear at all, or, at the most, only inferior fruit. The whole object of pruning is to ensure more regular crops over a longer period, besides obtaining an increase in size of the fruit, combined with a better appearance and quality.

Types of Bearing Wood.

Each kind of fruit tree has its own type of bearing wood: thus the apple and pear on fruiting shoots and spurs, the cherry chiefly on spurs, the apricot and plum on shoots and artificial spurs, and the peach on one-year-old shoots and spurs. If the different types of bearing wood are not known, the pruner may cut away the very pieces of wood most suitable to fruiting, and no crop, or very little, will be the result. Especially may mistakes in pruning be made in trees that have peculiar habits of bearing. In the Jonathan apple the flower bud is borne at the end of the shoot or spur: the Irish peach, too, puts out long shoots on which the flower buds will be at the end. It will thus be easily seen that if the pruner cuts away half the shoot or spur, as would be correct in most trees to strengthen it, he will also cut away the fruit. If these shoots are left long the first year, and then bear fruit, the weight of it will bend the shoot and cause spurs to form naturally where the constriction of sap is. These spurs will then bear the fruit for next season, and the shoots can then be shortened. Williams' Bon Chrètien pear has the same manner of bearing, and so is treated in the same way. The Winter Nelis pear has always been considered hard to get to fruit, because its habit of bearing was unknown. Only one kind of wood bears fruit in this case, and that is a small spur.

Other fruit trees are what is called "shy-bearing." By that is meant that the tree takes a longer time to mature its wood and bear fruit than other trees. It may bear a little fruit now and then, but will not bear full crops regularly. The Nickajack apple is one of these shy-bearing trees. A seedling fruit tree that has not been "worked," that is, neither grafted nor budded, is also irregular in coming into bearing. It is irregular, too, in the kind of fruit it bears, the latter not always coming true. Ten years will, in some cases, elapse before any fruit is borne, because the tree is too strong. The seedling is the strongest tree. "Working" is always a weakening factor, the sap not having so straight a flow.

Varying Degrees of Vigour affect Fruit Bearing.

Want of design or balance in the tree at the start is a frequent fault, and one that must place the tree at a disadvantage. Where one side becomes the strongest, it will continue to be the strongest at the expense of the weaker side, unless some means are adopted to restore the balance. In a young tree with its three main branches starting from the three uppermost buds, the top branch will always be found to be the strongest, second the next strongest, and the lowest the weakest, because sap flows first and strongest to the highest point. This may be checked by leaving the weakest branch the longest, and the strongest the shortest. If this balancing has been neglected or has not been sufficient, it may be done still later when the leaves are out. If the strongest be just topped, it will give the weakest time to make up to it.

Trees can often be seen with two or three strong branches on one side, and four or five weak ones to balance the other side. The weak tree will bear most on the shady side, for that will be the stronger side, while the strong tree will bear its fruit on the sunny and exposed side, that having the weaker and the riper wood.

The fruiting wood should be evenly distributed throughout the whole tree, for equal size and vigor mean equal growth and fruiting. A well-designed tree will have a healthier life, will fruit more regularly, and live longer than one lacking balance. When a tree is getting old its fruit will naturally become poorer, but if it be cut back and reduced in size it will have less to do, and the fruit will be better and more sure.

(To be continued.)

E. and W. Hackett

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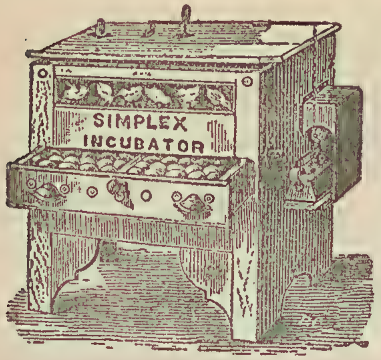

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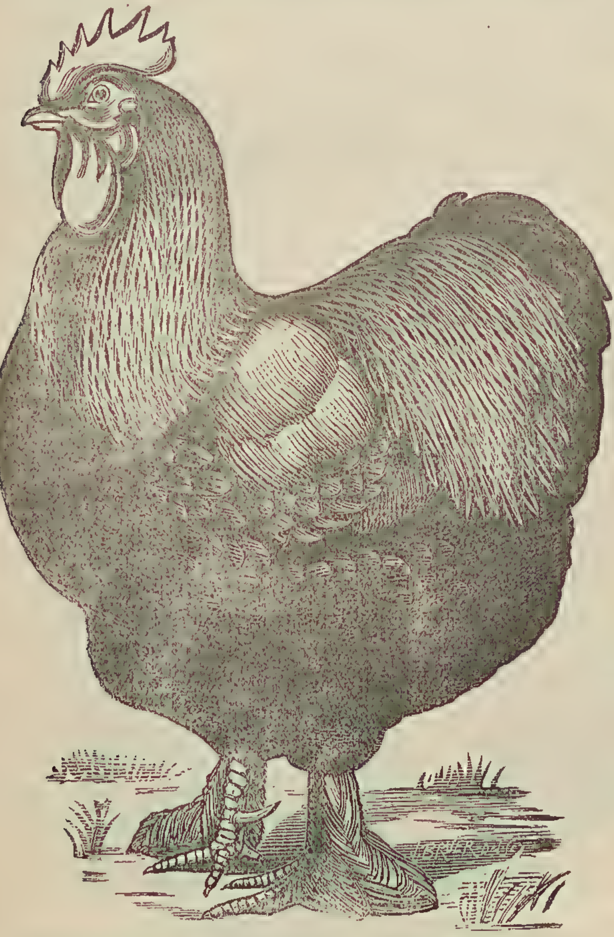

Information about Eggs.

Grade the market eggs. Put your brand on every case.
The demand for fresh eggs is growing.
The market eggs should be infertile.
Fresh air is essential to good laying.
Reliability is the main factor in selling your produce.
Take the males away from the hens just as soon as you have finished hatching.
The infertile eggs keep much better than the fertile and are consequently better adapted to market demands.

If you could only realise the value of appearance you would carefully wash every egg. Even new laids are not enticing if dirty.

An egg is one of the most complicated creations with which we have to do. This is true of its make up as well as of its power to produce a living bird. In construction the egg is beautifully adapted to the treatment it is likely to receive from those who handle it, and is able to withstand quite severe shocks without injury to its vitality and structure.

Everyone who has operated an incubator remembers the injunction to retain the larger and highest. The egg is pointed at one end and in the bowl like nest the smaller end naturally drops towards the centre and lower part of the nest.

Egg shells are composed of very fragile materials, and have very few of the elements of strength, yet they are comparatively not easy to break on account of their shape. At the same time, the chick inside is able to get out, because from the inside the shell is easily broken with slight use of force.

Just inside the hard shell is found soft menbraneous linings, each composed of fibres laced transversely so as to give them elasticity and strong powers of resistance. These linings separate at the large end, one following the shell and the other kept away from it by the air it contains. This is the air sac or space of which so much is heard in discussing artificial incubation.

Inside this lining is the white, composed of various minerals, salts, and almost pure albumen. When a fresh egg is broken, the white appears to be homogenous, but if it is hard boiled it will be easy to peel off layer after layer of the white which shows that this part of an egg is made up of a number of layers, each distinct and separate from the others.

Suspended in the white is the yoke, composed largely of mineral salts and fat. The oil from the yolks is highly valued in many parts of the country on account of its healing and soothing qualities. It is also built in layers, and is prevented from being displaced by a perfect contrivance. Surrounding the yolk is a transparent membrane which holds it together, and from this a membranous cord, perfectly transparent, extend in each direction until it reaches and is firmly attached to the inside lining of the shell at the end of the egg. This cord is curiously twisted and serves as a spiral spring to hold the yolk in its place in the centre of the egg, and to protect it from sudden jars, which might rupture the sac in which it is enclosed.

On one side of the yolk of a fresh egg will be found a whitish spot. This is the balance which always keeps the contents the same side up. If we turn an egg it will be but a few moments until the contents are the same side up that they were first. This arrangement is so placed that the germ of a fertile egg is always on the top side of the contents of the shell. This causes the germ to always lie next to the hen when she is setting, thus getting all the heat that the hen's body generates.

The construction of the egg is one of the finest bits of nature's handiwork, and when we consider that the smallest humming bird's egg is as complicated as the largest egg of an ostrich, we see how wonderfully well adapted to its use an egg has been made.

Feeding Fowls.

Variety is charming
Skim milk's good food
Keep the grit box full
Have the charcoal before them always
Poor houses mean more food used
Correct feeding is the mainstay of success
Cleanliness adds to the food's value
The cheapest food is not always the best
Don t forget pure fresh water always
Penned fowls should have green feed daily
Plan to grow plenty of green stuff in summer
The food should be clean enough to eat yourself
Feed nothing filthy, nothing stale, nothing decayed

Feed the birds at regular intervals : irregularity does not foster best results.

Wheat at a dollar a bushel may make more money for you than corn at 50 cents.

The analysis of every possible feed stuff should be in the hands of every poultry keeper.

Then when a favorite food gets too dear to give at a profit, you can substitute something lower in price, but with the same elements.

Sticking blindly to one ration year in and year out, dear and cheap, doesn't enhance the profits.

Keeping Poultry Healthy.

Use lime freely
Filthy water breeds disease
Bury dead fowls at once
Cholera always comes first
Decaying flesh causes limber neck
Diarrhœa and dirt are twin sisters

Charcoal is one of the best preventatives of disease.

A dose of castor oil first thing is a good plan of dosing the ailing fowl.

It will do no harm at any time, and will often effect a complete cure if given quickly.

The man who feeds his fowls on any old stuff is bound to have a yardful of disease.

When disease appears look first to the management, which is almost always to blame.

A farmer who was losing his hens wrote to Prof Dryden, of the Utah Experiment Station, that his hens were dropping dead, and asked what was to be done. In reply the professor said to never mind; it was a way hens had, some preferred death to the treatment they received. There is a moral attached to this little answer.

BEWARE OF CARBOLIC ACID.

A medical man gives a decided warning against the free use of carbolic acid on the poultry. In reply to the query, Would you please explain why some people claim that they have had great success in curing diarrhœa in their chicks by the use of carbolic acid, when others claim the contrary? he says—

As to the wonderful properties of carbolic acid (carbol) I shall herewith give for your own benefit and that of all readers an extract from the price-crowned work on War-Surgery by Professor Esmarch, M.D., the world-famed surgeon and professor of surgery, a surgeon-general of the first class in the German army, and a member of most of all the important scientific bodies of the globe. He says—

Carbolic acid is a very effective antiseptic. A watery solution of 1.100 stops upon longer contact the development of microbes: the germ development becomes entirely inhibited, though only after a twenty-four hours contact with a concentrated solution of 5.100. Solution in oil or alcohol are, according to Prof Koch (the famous Cholera-Tubercle Koch), without any antiseptic effect, But carbolic acid is very poisonous, and that not on internal use only? For even when applied externally in the form of washes, compresses, &c., to wounds, abrasions of skin and even the normal skin, it is easily absorbed into the system and does (particularly in children, but also in those adults who are suffering from cachetic conditions, anæmia, kidney troubles, etc.) cause quite often very severe symptoms of poisoning, acute (collapse), as well as disturbance of digestion, vomiting, maramus.

It also irritates the skin, particularly when used moist, and causes erythema and eczema, often combined with high fever, and strong solutions irritate the surface of wounds to such an extent as to cause severe secretions, yea, even as Lister called it, antiseptic putrefaction. Gangrene!

The professor adds "Carbolic acid is therefore much less used now than it was in the days of Lister, when it dominated as an antiseptic."

This was written by one of the foremost authorities in the medical world in 1885, has been recognised and acknowledged as true by others, but alas, now after a lapse of twenty years, carbolic acid is still the standby of profession and laity!

We have treated this question at particular length because the belief in the healing power of carbolic acid is so general among the people, and its true nature is so little known. We must warn our friends of its use, to protect them, their families and fowls, which already have to stand so much maltreatment.

Turkey Raising.

TURKEYS are one of the most profitable of all varieties of poultry providing the raiser has abundance of range, and can provide the birds with plenty of pasture. It is practically decided that raising them in close quarters will end in failure, though a few—certainly but a small proportion of those who try—have been exceedingly successful on small lots. It is also agreed that the moist seaboard is not an ideal place for them, and I have heard it said that they cannot be raised anywhere in the county of Cumberland in New South Wales. But all the same, exceptions crop up to prove, or to deny, the rule. Certain it is that our own efforts to raise them with similar treatment to that afforded to chickens, have been a failure in the coastal districts, and yet when we decided that confinement was killing them and let them out to their own devices, a goodly number were raised.

But we didn't raise them; they did it themselves. As a matter of fact, two days after they were let out they disappeared, mothers and all. We thought they were lost. Yet five weeks or so after the mother came back with a very fair proportion of her brood of nice size and over all their troubles. The range on which they were raised was dense, sandy scrub and heavily timbered, rugged mountain: it teemed with iguanas and other reptiles that made chicken raising, even at close quarters, no sinecure.

Our experience was duplicated by that of a neighbor, and this convinced us that under the surrounding circumstances we couldn't give the turkeys any points in being properly brought up.

The best climate for turkey raising is a dry one: they do admirably on our inland plains. The best method of raising them is to leave them entirely alone after they get their strength.

In starting get pure birds, they are so much larger than the ordinary kind which have been abused and inbred for generations that there is no question as to their superiority as a profitable proposition.

Get good, well grown birds: mate one male from seven to a dozen females and give them all the range you can. Try and encourage them to roost indoors and get them as tame as possible. Provide nice secluded nests or they will choose others of their own. Let the turkey hen do her own hatching and the results will be better.

When the chicks hatch, place mother and all in a wire-covered pen, with a nice coop in the corner. See the wire is too small for the chicks to get through, for they are terrors to stray.

Feed first on oatmeal, and bread soaked in milk and squeezed quite dry. Provide plenty of grit, and give chopped greenstuff daily. The greenstuff is the life of them, and the best sorts are common dandelion and chopped onion tops. So good is the dandelion that I once heard an old breeder say they will be successfully raised wherever it is abundant.

Make the poults learn to feed out of your hand, and use every endeavour to make them tame. This is very important as otherwise you will certainly have trouble when you let them loose.

After a few days run them on to chicken mixture or a mixture of finely-cracked grain, but give the mother a morning feed of mash and don't worry if the poults get some of it. After they are a week old substitute slats for a part of the wire front, giving the youngsters free access to the outside and keeping the mother confined.

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The best plan is to have a slatted gate, and for the first week tack a piece of scrim or hessian across the bottom to keep them in; then at the end of the week remove the scrim. Keep this going for another four weeks, then move coop and all into a nice shady spot where they can stay until matured. An orchard makes a fine pasture and it will be benefited by their presence

Keep the mother enclosed for a few days to become used to the coop, and then give her her liberty. By this time the poults should be able to tackle similar food to their mother. If there is plenty of greenstuff in the orchard (and when there are poultry in the orchard there should be, for the only cultivation required will be round the trees, until all the greenstuff has been devoured, when the whole of it should be thoroughly worked), they will, from now on, do nicely with two feeds a day until they are ready for market, when the fattening process calls for three good meals daily.

I have said the best management is to leave them alone. But there are a few things want careful attention. From the time the poults first get their liberty until they have "shot the red," that is until the head has become covered with the red caruncles, care must be taken to keep them dry. They are silly little fish, and will stay out in a shower, catching their death chill, while the shelter of their mother's wings and the protecting coop are within easy access. Whenever a shower threatens see they are at once driven into their pen, and take steps to retain them there until all danger is over.

Another thing, turkeys above all other fowls, need greenstuff and grit, and their presence or absence means the difference between success and failure. An abundant and regular supply of cracked charcoal from birth to pot will make a wonderful difference in their thrift, growth, welfare and final development. See it is always supplied.

Turkey raising, as we have said, is one of the most profitable features of poultry raising if local conditions are favorable: it is one of the hardest of tasks if they are not so, and we do not advise those so situated to try it. The poults are at once delicate and hardy. They won't stand too close confinement or wetting when young. Yet they can be raised with less actual attention and can take care of themselves better than any other class of poultry.

Raising Poultry for Profit.

In rearing poultry we must attend to nett profits instead of the number of eggs produced, the cost of keeping, or similar indications of the profits of our business.

At the Utah Experiment Station a pen of Rose Comb Brown Leghorns figured in some experiments. It cost 66 cents to keep one of these pullets a year, and the average egg production was 166, worth 1.96 dol: this shows a profit above feed of 1.30 dol for each of these pullets. Two other pens of the same variety made showing not quite so good I have instanced this pen because its egg production was the highest.

There were three pens of White Plymouth Rocks in the same experiment. The best record made by any of these pens was 176 eggs for each pullet in a year, worth 2.14 dol, and they ate feed worth 1.21 dol; each leaving a profit of 1.08 dol for each hen.

In this particular case the experiment shows that the feed that would keep 100 Rose Comb Brown Leghorns would maintain 50 White Plymouth Rocks. Or to put it another way the feed that would produce 10,000 eggs if fed to Rose Comb Brown Leghorns, would produce 8870 eggs if fed to White Plymouth Rocks.

These results agree with results in Australia, and I give the figures merely to show that egg production is not all that should be considered when we are wanting the best breed for profit.

Feed with your head as well as your hands if you wish to attain the limit in successful results.

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Dairying.

By Mr M. A. O'Callaghan.

How to Commence.

If he knew the district more intimately he would go into greater details as to the chief rules for successfully commencing the industry. The first consideration was undoubtedly the rainfall. No matter how rich the land might be a good rainfall is essential. The lowest under any circumstances must not be less than 25 inches; with 30 inches a man must use his brains to succeed, with 50 inches he should be successful without any difficulty. Cows must have a plentiful supply of good water, a running stream if possible — certain good clean water that the animal would taste with pleasure in consuming. On a hot day a cow will take 8 or 10 gallons of water, as her product contained the greatest per centage of water, and she wanted much for her bodily needs. Dams, if used, must be protected from filth, which otherwise the cows convey on their skins and deposit in the milkpail. Then provision must be made for green fodder or at any rate a good substitute. In winter time the farmer should have ensilage if he wants to make the most of his industry. No matter how good his hay might be, and lucerne hay was very good, there must be some succulent food. Fodder could be stored in silos in its green state, either by tub, or stack or pit.

ABOUT THE HERD.

To come to the class of cow. In buying a cow a man thinks he gives a big price if he gives £10 for her, but he would have to give double as much in England, where cows produce no more. The £10 would be repaid in one year if she were any good, and of course a buyer would have to remember that a seller did not sell his best cows as a usual thing.

If a young man wanted to make an economical successful beginning, he would advise him to go to a dairying district, buy 50 heifers from one year to eighteen months old, at say 70s to 80s. If they were secured a year before he intended to commence, by the time he was ready they would be in milk, and would cost £8 to £10 to buy them. He would have no pick of his herd, but he could cull out about fifty in the first year: a pure bred bull should be chosen.

The future of the herd depends upon the bull, and a pure-bred animal was essential, as he must be expected to reproduce his own good points, a thing which a crossbred bull, however good to himself, could not be trusted to do; this great lesson had been taught to the dairy farmers by the introduction of the Government bulls. No man must say he cannot afford a good bull for there is nothing in owning a herd that will not keep him. A merchant in his business charges the cost of producing the article before estimating his profit, so should a dairyman charge the cost of labor (even if done by his own family), of food and other expenses, and see what his cow turns him in. Select three cows as an example, and assume that the annual cost of attending each was £5: the first might produce 100 lbs of butter, which, sold at 1s, would turn in £5 a year—that cow is not worth owning, a hundred such cows would not be worth milking.

A second cow might produce 125 lb of butter, and she would be worth 25s a year to her owner: another might produce 150 lb—one of her sort would be better than two of class number two. Of course his estimate of production was very low, but he wanted them to realise the point he was making that a good cow must be secured. Success could only be achieved by bringing a herd up to a certain standard, and the bull is the animal that grades up a dairy herd. Do not buy a cheap bull—a good one gets fifty pounds a year. Say half of them are heifers, and you own them three years—he thus produces 75 heifers: put 75 good heifers against 75 bad ones, and you see the difference.

Therefore, whether it costs £1 or £10 more, secure a good bull: it is the greatest economy. Rather than use a bad bull, farmers should beg, borrow or steal a good one. Wool men do not mind how much in reason they pay for a ram to improve their flock: so should a dairyman regard his bull.

REARING THE CALVES.

The next matter is in regard to rearing the calves. No matter how good they are, they might be spoilt as a milk producing animal unless properly reared. The tendency of a calf is to lay on flesh; there is no necessity bring a calf up on a cow. Two bad results are liable to follow if it is done—it gives a tendency to beef, and the milk of the cow is always poorer. That is a matter they could prove for themselves, and the point had been tested hundreds of times.

When born some leave the cow on the calf for twelve or twenty-four hours. At many dairies they remove the calf as soon as they notice it, at others they leave them on for two or three days.

This method has its good points, and the main advantage is, that it is thought that the tendency to milk is thereby obviated. He preferred, on the whole, to remove the calf as soon as it is noticed, and give it its mother's milk for the first seven days, as the milk of a newly-calved cow is of special quality, containing certain medicinal properties which are good for the young calf. The calf should have new milk for the first twenty-one days, then the amount can be gradually lessened after a fortnight, and substitute separated milk. Any sudden change brings about digestive troubles, and is one of the main causes of scours. At the end of a month the calf need be given no new milk, but something must be substituted for the fat which has been taken from the milk; that is an easy matter.

Boiled crushed maize, fed with the milk, is good and cheap; but linseed oil cake is best. Two ounces daily, mixed with the milk, then gradually increased to 4 oz as the calf grows, dissolve in hot water, and mix with the milk, and always feed the latter warm. The cow's milk is at a temperature of a hundred degrees, and the thing is to follow nature as closely as possible. It must be given under clean conditions.

It is not good to feed from a common trough unless the calves are graded. Nothing goes bad more quickly than milk, and any left in the trough turns bad and contaminates the fresh lot when put in. It acts as a starter for the new lot, which might not turn bad there and then, but will do so in the calf's stomach with injurious results. At four months, or say six months, old, the calf will be fit to turn out. In the meantime, it would have learned to graze, and therefore good clean, sunny paddocks should always be provided, and the house they use absolutely clean. If the calf-scour germ once gets under the boards of the calf pen floor, you will have it every year until you shift the pen. The young heifer will be turned out from the time she is six months old till eighteen months, and then all depends uupon her treatment when being brought into milk. If the heifer is on the beefy side she should be sent to the bull younger than otherwise, as this is the only way to develop the milk-producing tendency and to counteract the beefy tendency. The dairyman is frightened of stunting the cow by having her in calf too young, but there is nothing else for it if she is of a beefy tendency.

The only way then is to give the young cow four or five months' rest after dropping her calf before putting her to the bull again, so that she gets a good chance to develop, and at the same time a start has been made in developing her milking qualities.

It is a great mistake to milk a heifer for two months and then turn her out. She should be milked just as a grown cow.

BREEDS.

The dairyman need not have pure bred cows to commence successfully. His type will be developed by the bull he keeps in a couple of generations. A crossbred cow will yield as much milk as a pure bred if bred on right lines.

Each dairyman should make his selection to suit his circumstances. It would be folly to try to keep Shorthorns on poor land, and it would be unwise to retain the small breeds on good land if you wanted to make something out of your steers.

If a man has a good run and wants to secure something for his steers, his attention should be confined to three or four breeds—the Shorthorns, the Red Poll, Holstein and the Kerry.

The Shorthorn is an ideal cow if the land is rich, but they are not suitable where plenty of good fodder could not be procured without much exertion. The smnll breeds will forage for themselves.

The Red Poll has all the good attributes of the Shorthorn on a smaller scale. It is one of the most valuable of breeds. It is hardier and a greater forager than the Shorthorn, consequently will do on poorer pastures.

The Holstein is perhaps the greatest milking breed in the world, having been bred for the milkpail for 2000 years. A cross with the Shorthorns gets good steers. The milk is not as rich as the Shorthorn, but it gives a larger quantity.

The Kerry must not be confused with the small breed, the Dexter-Kerry. The Kerry will cross well with the Shorthorn, and will hold its own anywhere On light lands, with deficient rainfall, where a regular supply of green fodder is not available, it would be hard to procure a better animal.

As for Jerseys, Guernseys, and Ayrshires, these small breeds did not give a revenue from steers, and the best thing to do with the bull calf is to knock him on the head.

Take the Jersey as a valuable butter breed, with an eye to nothing else; she gives a fair quantity of extremely rich milk. There is no better butter cow in the world. It is a false impression to imagine they are delicate; the fact is, that there is no tuberculosis on the Channel Islands, and the United States admit Jerseys without the test.

There are two classes of Jerseys. Seeing that so few Jerseys had been imported, he did not know where all the thoroughbred animals came from! Put a Jersey bull to any class of cow and the progeny will probably be of good color. He had seen quarter-bred animals shown as pure bred, and what more could be expected of their progeny than weeds.

The proper English Jersey should have plenty of substance. He had seen these seven breeds referred to running together under the same conditions, and the Jerseys were certainly not delicate, although they could not stand the cold like Ayrshires or Kerries. Crossed with a Shorthorn, the Jersey produces a good calf, but he would not advise crossing with the small breeds.

The Guernsey cow promises to be the most popular cow in some of the States. Perhaps a thousand years ago the Jerseys and Guernseys were all the same breed, now they are very different. The Guernsey is larger and coarser; consequently hardier towards the cold. It had been used for draught purposes once, which should account for its size compared with the Jersey. It crosses well with the Shorthorn, Ayrshire and Holstein.

ABOUT MILK AND CREAM.

When the milk is drawn from the cow it is at a temperature of about 100 degrees, and that is the right heat to separate at. Never separate at less than 90 degrees, or there will be a loss of cream. When the cream leaves the separator it must be cooled, and that is why it should be delivered as soon as possible to the factory.

The time must come when cream must be delivered daily. It is the only way to procure first class butter, and the farmer would secure a better test sample. It is a bad habit to pour your hot cream of one milking into the cold cream of the previous milking. Separate into another vessel, and when cool mix and stir thoroughly. Afterwards the more cream is stirred the better, as a fresh surface is continually being presented to the atmosphere.

Some farmers never stir, but allow froth to accumulate on the milk—nothing is worse, for the cream at the bottom becomes sour and affects the whole lot.

Dairying, except on clean lines, is impossible

A dirty man is an enemy to his district, as his product might mix with others and spoil the whole output.

He urged farmers to go in for ensilage. It is the easiest thing in the world to make—it only wanted cutting at the right stage, and would keep one year or ten.

Vegetable Experiments in Texas.

(J. K. Robertson and E. C. Green.)

Experiments are reported on the culture of onions with and without irrigation, and of beets, radishes, lettuce, carrots and turnips for bunching for the early market. With each crop tests of varieties were also made. The growing of early garden crops for northern markets is rapidly developing in south Texas.

Onions ..With this crop the seed was sown in beds and the onions transplanted to the field when they had attained suitable size. Thrips, which seriously affected the onions in the seed bed, were kept under control by spraying with whale oil soap used at the rate of 2 lbs dissolved in 6 gallons of water. At setting out time the tops of the onions were trimmed to about 5 inches, and the roots cut back to about 6.75 inches. Eight cultivations were given. In addition the unirrigated plat received one hoeing.

Level cultivation was practised and at no time was it deeper than 1.5 inches. The irrigated plat received four irrigations in addition to the preparatory one which was given to both irrigated and unirrigated alike. A mixed fertiliser containing 4 per cent nitrogen, 6 per cent phosphoric acid, and 9 per cent potash was applied at the rate of 500 lbs per acre and worked in each side of the row in March.

On one-twentieth of an acre the irrigated plat yielded 1928 lbs, of which only 2 lbs were unsaleable.

The unirrigated plat of the same area yielded 987.4 lbs, of which 12 lbs was unsaleable.

These yields are at the rate of 676.5 bushels and 350 bushels on the irrigated and unirrigated areas respectively. The onions sold at Beeville for 2 cts. a lb. The net profits from 1-twentieth of an acre with irrigation was $33.45 and from the unirrigated $15.69. All of the expenses, such as cost of preparing land, irrigating, transplanting, cultivating, fertilising, harvesting, seed, &c, are shown in tabular form. The variety used was the Red Bermuda.

It is believed that the results secured in these tests with irrigation would have been greater had the irrigating facilities been more efficient. At times the onions suffered from lack of moisture. In the variety tests 19 varieties were compared. The Bermuda again proved superior in point of earliness and yield.

Beets...The beet is the favorite bunch crop of south Texas truckers. The crop requires from 80 to 90 days to reach saleable size from the time the seed is sown. With good culture two crops can be grown between October and May.

In the station experiment bat guano was used broadcast at the rate of 500 lbs per acre when the land was prepared. Six irrigations and 9 cultivations were given. Frost and ice occurred 12 times during the months of January and February but the freezes were not sufficiently severe to seriously injure the crop, though they did retard growth. The bunches were shipped in ventilated barrels without ice. From 19 to 25 doz. were packed in each barrel, the tops toward the centre.

When the crop was marketed it brought 40 cts. per dozen bunches in March and April, and 25 cts. in May. The net returns from the sale of beets grown on one-tenth of an acre was $67.51 and the cost of production $13.28, leaving a profit of $54.23. The authors state that a net profit of $500 per acre for a single crop of beets is within the range of possibility in that section.

Variety tests indicated that the Electric variety can be most safely recommended. Crimson Globe and New Meteor of the newer varieties are considered especially promising.

Radishes...Three profitable crops of radishes can be grown during the fall and winter seasons in the vicinity of the station. From one-tenth of an acre 169 dozen bunches were sold, each bunch containing from 12 to 16 radishes. The cost of growing one-tenth of an acre of radishes was $5.60. The radishes sold for $39.27, leaving a net profit of $33.67. Exclusive of the radishes sold about 1.5 bbls were destroyed by a severe frost in January.

In shipping radishes they are packed in unventilated barrels in concentric circles with the tops toward the centre of the barrel. When the barrel is about one third full of radishes a layer of ice is put in. A second layer of ice is added when the barrel is two-thirds full of radishes, and the final layer when the barrel is nearly full. The ice is smashed up so that none of the lumps is larger than a hen's egg. About 50 lbs of ice is used per barrel. Enough radishes are heaped on the top layer of ice so that when the barrel arrives at its destination it is about level full with the radishes.

Twenty-eight varieties were grown in the variety test. The turnip-rooted varieties are considered the most desirable for the western demand Of these Scarlet White Tipped is the most popular on account of its appearance. The test indicated that Round Scarlet Chinese and Icicle are worthy of trial for the kitchen garden, as they were of the best table quality. All of the long-rooted varieties except Market Gardener Long Scarlet, Chartier, and Early Short Top Long Scarlet became pithy or hard and woody before reaching a suitable sale size, the last two mentioned being recommended when a long-rooted sort is wanted.

Lettuce, Carrots, and Turnips...The cultural tests with these crops failed, but the results secured in tests of 21 varieties of lettuce are recorded with brief descriptions of the varieties tested. All the varieties of lettuce suffered from want of water and insufficient utility and none of the plain-leaved varieties headed up satisfactorily. 'The crinkled and loose sorts made the best heads and were slower to run to seed.' Rice birds destroyed the carrot crop. Of the sixteen varieties of turnips tested the Purple Top White Globe and the White Dutch Strap Leaf are recommended to truckers as of good value The Purple Top Flat Strap Leaf and Extra Early White Milan are also considered satisfactory.

Air Treatment of Milk Fever.

Let me give you my experience in one case, which will be sufficient. I was called late one evening to attend a cow that was down, unable to raise her head. I gave her the air treatment, and the next morning word came over the 'phone that she looked as if nothing had ever been wrong. The next evening I received word that she was down again, the same as before. She was treated again, and she got up as before, but the following day we had the same experience, and at each visit the owner was talking about the large flow of milk he was getting. It now came to me that his taking such a large amount of milk at one time was where the trouble lay, so he was ordered not to milk her out clean again for some days, but simply do as nature suggested, and that was to take a small amount from each teat, and that frequently, according to the flow, say four to six or eight times a day There was no more trouble in the above case, and I have given the above orders to owners many times since, and never have been called to see a like case or known of a fine cow having milk fever when the above directions were followed.

I would also suggest that the owner of a heavy milker shrink his cow before she calves; take away the rich feed for a few days and put her in a dry lot. It will tend to prevent her udder from becoming so distended and perhaps inflamed. Begin taking small quantities from each teat as soon as the udder becomes well filled, no matter if it is several days before she calves; it will do no harm either to the mother or offspring.—J.V. in Wallace's Farmer.

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THE FLOWER GARDEN

Floriculture.

Autumn digging, pruning, planting, and transplanting, will occupy much time in large gardens. Preparations for planting should particularly be made and the plants set out at the first opportunity, so that all possible advantage may be taken of the short winter season. The majority of kinds of hardy bulbs should be planted during the month. Care must be taken not to bury these too deeply. As a rule the depth of soil above the top of the bulb should be equal to twice the depth of the bulb itself. To grow bulbs to perfection the soil must be enriched with well decayed stable manure, and this should be dug in deeply so that little or none of it comes in contact with the bulbs Bulbs and tubers of crocuses, snowdrops, anemones, and ranunculi should be surrounded by sand, as contact with rich soil often destroys the young delicate roots as fast as they emerge from the caudex of the bulbs.

Main lots of annuals may now be sown. Those with very small seeds should be sown in boxes or very small beds of fine sandy soil and very lightly covered. The soil should also be thoroughly soaked before sowing, so that the seed may not be washed out of place, as is often done. Larger seeds may be sown to advantage in patches in the open borders, where they are to remain.

Chysanthemums will be in full bloom and require attention in staking and tying. Liquid manure applied at this time improves the color of many varieties and increases the size of all considerably. The best varieties of crysanthemums should now be marked for future propagation Where there is much digging to do a great deal of labor may be saved by hoeing the borders twice during the autumn and winter to destroy all weeds. It is the weeds that cause so much labor if allowed to grow amongst the plants. The hoeing takes comparatively little time, and all is kept neat until the digging can be done towards the spring, which is the proper time. When the digging is done early in the winter weeds spring up soon after, and this necessitates treading over the ground to destroy them when the soil is soaked with the winter rains. In preparing and planting shrubberies greater care should be exercised than is sometimes the case. Where the soil is poor it is as necessary to use manure as it is in the case of vegetables, and it would be a difficult matter to use too much. Poor ground as a rule should be broken up much deeper than rich or medium soils. Many shrubs delight in extra rich ground, and it is necessary to enrich the soil for these by working in a little manure where they are to be planted.

In planting new shrubberies one of the most important points lies in allowing room for the full development of each individual specimen. Another equally important point is taking into consideration the ultimate height attained by them. As the characteristics of trees and shrubs are so well known and are carefully pointed out in the various nursery catalogues, there can be little excuse for making mistakes in planting them. As a rule the planting in small gardens should be precisely the same as in larger ones, except that the back rows, which in large places would consist of trees, are left out. Thus, whatever width of border is to be planted, the commencement is the same. The front row of a shrubbery is planted 3 to 4 ft. from the edge of the drive or walk, the second row 10 ft., the third row 18 ft.. and the fourth row 30 ft. from the edge. Where the shrubbery is backed by a plantation of trees these latter are planted at regular distances over whatever space is apportioned to them. The front row of shrubs should consist of dwarf kinds, growing to a height of some 2 ft.; the second row of those which are some 6 ft. high when fully developed; the third row of those attaining some 10 ft. in height; and the fourth or back row of shrubs or tree-shrubs, which when fully growing average some 18 to 20 ft. in height. Beyond this line, but at some considerable distance—say, 40 ft. at least —forest trees may be planted as mentioned above. These are the distances at which it is safe to plant the rows, but the distances between the shrubs along the rows has also to be considered. The correct rule is to allow a space between the stems equal to one and a half times the ultimate height of the shrubs in any particular row. This allows ample space for planting (at least for some years) a variety of herbaceous plants, bulbs, and other annuals and perennials.

The Hills

Operations in this department can be started much earlier than on the plains. Planting generally should be commenced in earnest during the month, although it may be necessary to water at the time the plants are put in. The advantages are so great that no objection can be shrubs, and herbaceous plants of all kinds should be put out at once. New ground intended for tree-planting, flower borders, etc., should be broken up during the month, before it becomes saturated with moisture. All hardy tubers and bulbs should be in place by the beginning of May. The pruning of deciduous shrubs, including roses, may be done at once. Sow during the next few weeks any strong-growing annuals. These may be sown in the borders direct, simply preparing small pitches in the borders and covering the seed with rich, sandy soil. Chrysanthemums should be kept regularly watered with liquid manure to ensure perfect development of flowers. If in exposed positions the stems should be securely tied at neat stakes, and intended specimens tied close up to the terminal buds. Any of these in pots may be planted out if watered immediately afterwards.

Cultivation.

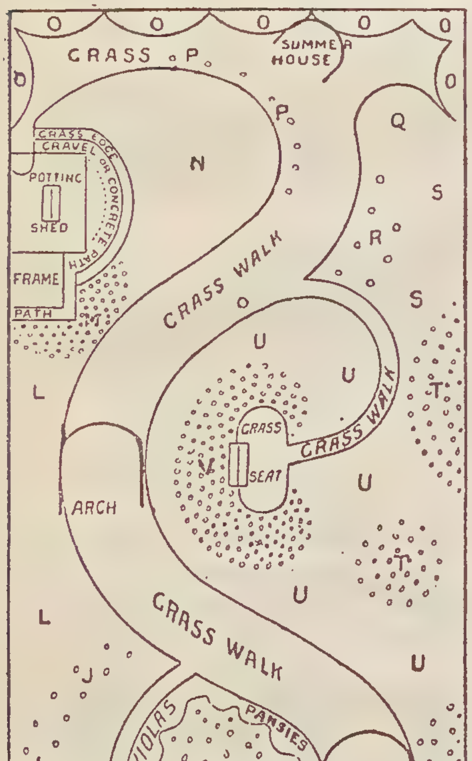
In an interesting article to the Horticultural Advertiser on the subject of methods of cultivation used in British Columbia and California, where the "dust blanket" is found to be of the greatest service, Edward Wallace, of Vic., B.C., says—

The preservation of moisture is not the only benefit to be derived from cultivation. It is really wonderful what a beneficial effect this constant stirring and consequent æration of the soil has upon vegetation. An agricultural chemist would explain this. The growth of everything is stouter, stockier, and also better ripened. In sections of California, where both cultivation and irrigation are practised, it is invariably the case that fruit produced with irrigation is inferior. True, it is larger, but it has not the flavor, nor has it the shipping qualities of fruit produced by cultivation.

As an experiment this season, I planted in our herbaceous ground one bed, which was to receive no watering. To avoid any underground seepage, the topmost bed on a sloping hill was selected. Here we planted a variety of subjects, border carnations, pyrethrums, doronicums, aquilegias, helianthus, rudbeckias, coreopsis, Michaelmas daisies, Shasta daisies, delphiniums and many others. Bear in mind that we have a three-months' dry spell. This bed received no, one drop of artificial watering, but was cultivated frequently and thoroughly. Some, notably Coreopsis grandiflora, did better than with water, even as regards flowering. Without exception the plants are in better shape for sale, much more sturdy. Even the moisture-loving Pyrethrum uliginosum did well, growing three feet, from single shoots taken off this Spring.

Yet, one more argument in favor of the "dust blankets." One part of the interior of this ountry is known as the dry belt, where only a scanty rainfall occurs in Winter. The Summer is long and very dry. Many portions consist of dry, sandy wastes, covered with sage brush; but are these sandy wastes so dry? I trow not. In digging native bulbs, such as Calochortus macrocarpus, Fritillaria pudica and Lewisia rediviva, which always occur in the sandiest spots, I always found more or less moisture at a depth of six inches. In my opinion the shifting sand, blown about by every wandering breeze, forms a natural dust blanket.

Sandy soils retain moisture better and require less cultivation than heavy loam or clay soils.



Plan for Flower Garden.

A Remedy for Red Spider.

I am a constant reader of the Florists' Exchange and owe a debt of gratitude to those who contribute the useful results of their experience, a debt to be paid in like good coin.

The last Summer was unusually dry with us, resulting in a plague of red spider covering garden plants, grass and clover. Many plants were out of reach of the water system, so that we could not visit them with a sharp stream. I tried all things in the way of medicine that I could think of without any results, the spiders were still there and happy. The one vulnerable point that I discovered was to glue them fast. I found that by making a solution of glue and spraying the plants that every tyrant that received a touch of the solution was dead in two hours. Washing them free of the glue and examining them under a two-thirds objective proved that there was no resurrection. This did not kill the eggs I then made a number of careful experiments with various sticky mediums, and found that a boiled flour paste, with whale oil soap, would kill adults and eggs with one thorough application. I did not find that it injured anything except gloxinias and geraniums, and they were unharmed if well syringed within a few hours. By adding tobacco or arsenic, or both, other insects were effectively destroyed. Soap starch and nicotine solution worked fine on mealy bug Try it, brothers; mix some brains with it, and report any improvement.—A. B. Leckenby.

Vegetable Garden.

Perennial crops should now be manured and dug for the season, as root growth commences as soon as the soil becomes moistened. Although the crops are obtained no earlier, they are stronger and more prolific if the manure is dug in earlier in the season. These crops consist of asparagus, seakale, rhubarb, and globe artichokes New beds for planting these perennial crops should be formed at once by heavy manuring and trenching to a depth of 18 in. Under proper cultivation asparagus is the most productive vegetable that can be grown, besides being the choicest, and it deserves to be more generally grown and to be sold at much cheaper rates than at present. It is also the easiest to grow of any vegetable. All main lots of winter cabbage, kale, and broccoli should be planted by the middle of the month. Large breadths of early kinds of turnips should be sown, as this is the only reliable sowing that can be brought on by the natural rains, and, however early sown, the roots will remain good until the spring. Thus one large sowing will give a winter's supply whether stored or left in the ground. Garlic, shallots, chives, tree and potato onions should all be planted during the month, giving them deep, well-manured soil.

In this department do not neglect preparing the land in time for autumn planting and sowing, for as the season changes and a good time comes, so should, and will, the desire return to raise a crop of good fresh vegetables. Some little effort should be made, therefore, to be ready in good time, and if possible raise some plants of cabbage, cauliflower, etc., even though it may be a matter of considerable difficulty to do so. If such vegetables are ready and the ground is ready also, they can be planted where sufficient rain has fallen to saturate the ground

In the cool table-land districts the broad bean may be sown with every chance of success, and towards the end of the month it can be sown in the warmer districts. It is a good vegetable and deserves to be grown.

The watercress is a vegetable but seldom cultivated in the kitchen garden, although it is one that deserves attention. It grows wild in many places—in watercourses and swampy land—but this salad vegetable cannot be depended on for being sufficiently clean for use where dogs, sheep or cattle may have access to it. It is not difficult to grow even with a limited supply of water—the soil needs but to be kept moist with water and liquid manure, and it will grow luxuriantly. A small patch, if well looked after, will yield a sufficient quantity of good succulent tops for the use of a family. This is quite a different thing to the cress that is generally associated with mustard. When planting cuttings of watercress shade them well, and after they have made roots the shading can gradually be removed altogether.

Herbs of all kinds may be planted, or if these cannot be easily obtained, seeds may be sown. A good collection of herbs will be found very useful, and a sufficient quantity to supply all needs will take up but a small space in the garden. The value of herbs does not seem to be generally appreciated, judging from the limited number grown in country gardens. Some parsley, or maybe a plant or two of thyme, or a patch of mint or something of that kind, may be seen, but a collection is a rarity indeed.

Look ahead for the sowing of some onion seed, for it may be sown extensively during April; therefore, some ground should be set apart and well prepared in the meantime. The onion is such a useful, and almost necessary vegetable, that it should on no account be overlooked—it needs good, well-drained soil and good manure in order to grow well.

Asparagus—It would be desirable to have the land for the planting of this vegetable prepared in good time, for although planting need not be carried out before the early spring, the opportunity of a slack time should be taken to have everything ready, and save a rush at the last moment. The ground, which should be well trenched, will then have time to settle down, and thus be in the best condition for planting.

Beans, French—During dry seasons, beans and peas are liable to suffer from the attacks of red spider and thrips, and the leaves gradually turn yellow and fall off and the plants cease to bear. When this is the case the beans and peas should be pulled up and burnt, and the ground prepared for some other kind of vegetable In the cool districts it is not advisable to sow seeds except in limited quantity, for there is no knowing when frosts may appear to cut them down. In the warm places along the coast this bean may be sown as extensively as may be required.

Beans, Broad — Towards the end of the month a row or two may be sown, and land prepared for a more extensive sowing next month. Dig the land deep and apply a good deal of manure—lime, superphosphate of lime or gypsum, will improve not only the growth but the quality of the beans.

Beet, Red—Sow a row or two: as soon as the seedling beets have attained the height of 2 or 3 inches, thin them out well.

Beet, Silver—Sow a little seed, either where the beets are to stand or for transplanting—the latter is the best method, and if adopted will save a great deal of seed. Make the soil rich with abundance of good manure.

Broccoli—Sow seed in seedbed in drills for future use, and prick out seedlings from previous sowings which are large enough. Good sturdy plants available may be transplanted if weather conditions are favorable.

Cabbage, Cauliflower, Brussels Sprouts, and Savoy may be treated in the same manner as the broccoli. All the seedlings of these should be carefully transplanted, and afterwards effort should be made to keep them growing without a stop, especially the cauliflowers and broccoli.

Celery—A very little seed may be sown, for but few plants are likely to be required at a time. Any well grown plants on hand may be transplanted to land which has been specially prepared by very heavy manuring. A great deal of water will be required for celery should dry weather prevail. Celery plants which have nearly attained their full growth may be earthed up, or their stems blanched by any effective means the grower may please to adopt.

Cress and Mustard—Sow a little seed to keep a supply going, and water well if the weather is dry.

Endive — Sow a little seed and plant out seedlings already raised. Use abundance of manure, and grow the plants as speedily as possible, or else they will not be so tender and crisp, nor so well flavored, than if they were allowed to grow slow.

Herbs—These useful vegetables should receive the attention they deserve. Seed may be sown in seed bed, boxes or pots, where the seedlings can be carefully attended to when they come up. Plants available may be planted out if the weather is favorable. Large overgrown plants may be taken up, divided and the best parts planted.

Leek—This is a good time of season to sow largely of seed. Sow in rows in seed-bed and transplant when the seedlings are 6 inches in height or even larger. The soil should be made very rich, and it should also be kept quite moist during the growth of the plants. The use of liquid manure pretty frequently is advisable.

Peas—In the cool parts of the State peas may be sown if the weather is not over dry.

Radish—Sow a little seed now and then to keep up a supply of young radishes for use.

Sea Kale—Sow a little seed in seed bed.

Spinach—Sow seed in drills, about 18 inches apart, in good well-drained soil. As soon as the seedlings are large enough, thin out well.

Shallots and Garlic—If cloves can be obtained plant out in rows about 1 foot apart. The ground should be well dug and well manured before planting. Set the shallot and the garlic quite firm in the soil, and cultivate well between the rows as those plants grow.

GRIFITHS BROS

TEAS

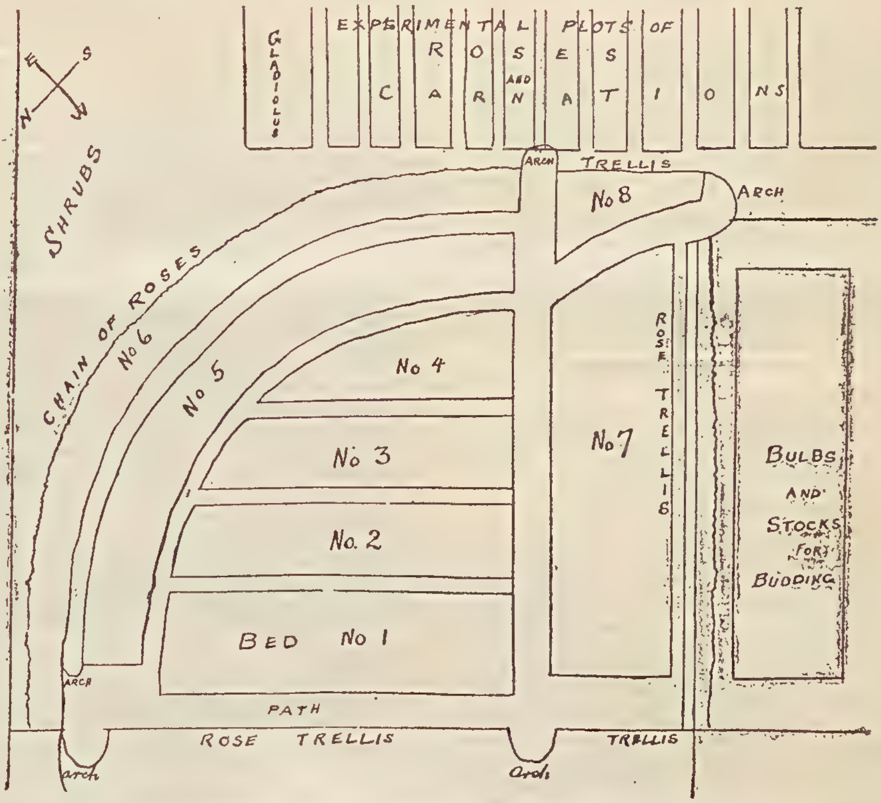
SATISFY

49 Rundle St., Adelaide,

... AND AT ...

MELBOURNE and SYDNEY.

ROSE GARDEN.



THE ORCHARD

Fruit.

After storing late apples and pears the most important work here will be preparing ground for planting. This cannot be done too early, as the soil improves considerably after being exposed to the mellowing influences of heat and air. Where the soil is at all poor or shallow the whole should be trenched at least 18 in. deep, and plenty of decayed manure should be dug in to the full depth. Bonedust would also be a great assistance in poor soils if thrown into the bottom as the trenching proceeds. Orange and lemon trees may be planted up to the end of the month, and will be found to succeed better as a rule than those planted in the spring, and this involves much less labor in watering. If planted at this time and given one good watering, they would require no further attention until late in the following spring, by which time they would be fairly established. In preparing ground for fruit trees a distinction should be made between those kinds that require extra good soils and those that do fairly well in soil of a medium quality. For instance, the apricot, nectarine, peach, orange, lemon, guava, and most varieties of plants would exist miserably in soils in which the apple, pear, cherry, and almond would do well. Yet we often see these trees planted together in ths same orchard, with no difference made in the preparation of the soil, with the result that the most delicate trees soon succumb to their uncongenial surroundings. This should show the importance of devoting a plot specially to each section of tree if we wish to secure the best results. In some of the larger orchards the desirableness of keeping the different kinds of trees apart is recognised. Even there, however, special application of manures is not often practised It is in smaller gardens, where the fruit is grown chiefly for home consumption, that the trees are mixed without regard to the particular requirements of each, and in such cases it is more necessary to plant and cultivate them separately according to their individual requirements, manuring liberally those varieties mentioned above, and by judicious pruning preventing the stronger kinds from overshadowing them. Close planting also is a bad and common practice. This occurs through the natural desire to have as much variety in fruits as it is possible to crowd into a given space. Whether the soil be poor or rich but little difference should be made in the distances at which trees are planted. Twenty feet from stem to stem is planting perhaps too close.

As crops of apples and pears are cleared off the trees a commencement should be made to scrape the stone to remove all refuges where chrysalis of codlin moth might lodge. An autumn dressing of limewash is also an excellent preventive of insect pests of all kinds if applied to the stems and main branches. It also destroys all lichenic growths, to which these trees are often subject in damp situations. Land intended for grape vines should be broken up at once to secure the advantage of early rains, as, with all other deciduous plants, vines should be planted, if weather permits, as soon after the foliage has fallen as possible. Ground should be made ready for strawberry planting during the month, heavy manuring and deep digging being the most important features of this operation. For bush fruit the ground is prepared in much the same way if heavy crops are desired Currants, gooseberries, and raspberries require the same treatment, viz., heavy manuring and deep digging, and this work should be performed during the next few weeks. Established plantations of these fruits should be manured and dug towards the end of the month. They should be mulched with stable manure immediately after.

Orchard Notes.

BY W. J. ALLEN.

On account of the rather backward season, apples which usually ripen and are fit to pull by the middle of February are just ready to pick, In picking and storing the fruit, the utmost care should be taken in handling so as to avoid bruising it, else it cannot be expected to keep.

If intended for export the fruit should be picked on cool days and not allowed to stand in the sun, but should be kept in the shade of the tree until it is carted to the packing house, and here also it should be kept as cool as possible from the time it is taken from the tree until it reaches the consumer. Never by any chance should it be allowed to stand in the blazing sun at any time, nor to be over-ripe before being picked.

Generally when the seeds are well-coloured it is ready to pick, and if properly stored will keep without shrivelling—that is, if they are keeping varieties. Apples keep best in cold storage at a temperature of 32 degrees Fahrenheit.

Green Manuring—During this month black tares, gray field peas, or any other crop intended for green manure should be sown among the orchard trees. The earlier they are put in the better are the chances for a good crop, as it must be borne in mind that such a crop has to be ploughed under early in the spring in order that it may be well rotted before the dry weather sets in, also to prevent it absorbing moisture which should be conserved for the use of the tree. In sowing this crop it always pays to sow with it about 80 lb of superphosphates when the soil is in fair condition, but where the soil is poor more than the quantity should be used. If any doubt should exist in the minds of growers as to whether or not it pays to apply manures to land sown to green crops, let such experiment by omitting the manure from an occasional row, and the results will be so convincing that for the future no doubt will exist as to whether or not manure should be applied with the crops.

Red and other Scales on Citrus Trees.- If it is found that citrus trees are infested with scales they should be fumigated as early as possible in order to cleanse the trees and fruit. The work should be done on a cool or cloudy day or at night time. Avoid treating trees on hot days or in wet weather, and do not fumigate them if they have been sprayed with Bordeaux mixture at any time during the spring or summer, or the effect will be very disastrous to the trees. If the grower is not in a position to fumigate, the spray pump should be brought into requisition, and the trees given two or three applications of resin, soda and fish soil, or some other well known remedy which can be applied at a reasonable cost. There is usually a good export market to be found in other States for clean, well-developed fruit, but they do not require any of our dirty inferior products.

At no time in the year can the results of different methods of pruning be seen so well as when the fruit is ripening, when each variety should be closely watched, and such notes taken thereon as will serve as a guide for the following year's pruning. It is always well to bear in mind that trees or vines must not be overloaded if they are expected to return regular crops of high standard fruits, which quality alone will always command the highest prices on the market and best repay the grower, whilst taking the least out of the trees or vines.

The orchardist or farmer who intends planting a new orchard or extending those already established, should see that the land is prepared for the reception of the trees as soon as possible, as it is well to have the land well broken up so that it may be exposed to the air and weather for some time prior to planting. The application of from half to one ton of lime to the acre would materially improve its condition, particularly on sour country, and the grower would find himself well recouped for the outlay by the extra growth which the trees would make.

The drying of apples, raisin grapes, sultanas and prunes will, where these fruits are being grown, occupy the attention of the orchardist. After the apples are peeled and sliced they should be immersed for five minutes in a brine made as follows—Dissolve 1 oz of salt and dilute with 2 quarts of water, then spread the fruit on trays and place in the sun or evaporator to dry. The prune and Gordo-Blanco grapes are, when ripe, immersed in a lye made as follows--Dissolve by boiling 1 lb of caustic soda in from 8 to 10 gallons of water, and in this dip the fruit for about one or two seconds, or just long enough to make minute cracks in the skins when the solution is just on the boil.

In some districts the skins will be found tougher than in others, and therefore it will be necessary to test the fruit to find out for what length of time it will need to be immersed in order to slightly crack the skins. Over-dipping must be avoided, else the fruit when dried will be ragged, and in consequence will be classed as inferior.

Before packing prunes they should be dipped in hot water for at least five minutes; then put out in the sun to dry thoroughly before packing in boxes

Those who are most successful in fruit growing have found that they have had to combine a thorough system of cultivation with proper pruning and judicious manuring to attain these results. There is a time when each of these several branches of the work should be done, and by neglecting to properly attend to any one of them certain loss to the grower will inevitaply follow.

Codlin moth should still be watched most carefully, and all grubs killed which have found shelter in the bandages. Also all fallen fruits should be picked up and destroyed.

Jack Paine,
...Hairdresser and Tobacconist...
UNLEY ROAD
A CHOICE STOCK OF
CIGARS, CIGARETTES AND TOBACCO
To Select from.

Prize Essay

OF THE

Burnley School of Horticulture

BY E. M. ROLLAND.

Subject: "The Most Common Causes of Irregular Bearing and Imperfect Development of Tree Fruits and their Remedies."

No. II.

When a Tree should Bear.

The ages and conditions under which trees bear have great influence on their regular bearing capacities. The maturity of the tree, not so much its age, decides the time of its bearing.

In a very suitable position the tree might be allowed to bear in three years, whereas the same kind of tree in an unfavorable position might not be mature for ten years. Pears, under favorable conditions, may be fruited on an average of three years, and remain regular in bearing. In poor soils they would need five years.

Apples, plums, and cherries can be dealt with in the same way.

With peaches, a strong tree must be secured before allowing it to fruit; perhaps three years would be long enough in the hot north, where it is at home, but in the south and colder climates not before it is five years old.

The age is the same for apricots.

Lemons differ, for wherever they grow freely they may be allowed to fruit.

The Need of Light.

"Blindness" is frequently the result of bad pruning or insufficient trimming out. The sap runs to the highest and strongest point first, so that the heaviest shoots are found naturally at the top of the tree. These, if they are not taken away, form a kind of hood, preventing air and light entering the centre, to the detriment of the inside branches. It is quite common to find unripe wood inside, and consequent fruitlessness or blindness. Each branch should have sufficient room to throw out its fruiting shoots and spurs without cramping the next. The main branches should be at least 2 feet apart, if there are fruiting shoots. Where there are only fruiting spurs they could be closer. If the shoots at the top of the branches are not removed, the consequence will be that all the sap sent up by the roots will remain there, and the lower part of the tree being unnourished will remain quite bare, and will be so much space wasted. By thinning out of too crowded wood and by keeping the top of the tree light the growth will be forced down below and the whole tree furnished with fruiting wood.

"Blindness" may also be caused by the tree being either too strong or too weak, A strong tree may easily be made stronger by a wrong way of pruning. The bigger the wound the stronger will be the new growth. No heavy cutting back should be done on a strong tree, but the whole piece taken away. The fruiting wood will have to be some removes away from the trunk to get weak enough wood, as fruit is borne on a slow flow of ripened sap, and cannot be borne where the flow is strong. The branches should be encouraged to grow in a horizontal position, for sap flows strongest along the most upright channels. In a strong tree the sap is so often unripe that only leaf buds are formed or such flower buds as are formed are pushed off.

A weak tree will need a heavy pruning to strengthen it. Everything should be done in the way of cultivating good drainage, &c., and the branches should be grown on as upright lines as possible.

Root Systems.

Trees, by wrong methods being adopted, may be very much weakened, and, strange as it seems it is perhaps then that a heavier crop of fruit will be borne. But this is only a temporary spurt of the tree, as it will be followed by irregular and light crops and final death, if the tree be not in some way strengthened. A mistake when the young tree is first planted may cause irregular bearing. Very few realise the importance of pruning a young tree's roots. Often the young tree has strong roots on one side and weak ones on the other. If the strong roots are not curtailed, the tree will be thrown out of balance, for it is an axiom in fruit tree culture that the side which has the strongest roots will also have the strongest branches, and these would throw the whole framework of the tree out of balance

Another way to balance the roots would be to plant the side of the tree with the stronger roots to the windy quarter, the opposition of the wind and the exposure would be a weakening influence. The cutting back of roots in the dormant season would weaken the whole tree, because it would mean that the reserve of food to be laid up by the roots would be lessened, also the cutting back of head and roots in the growing season will inevitably weaken.

If the soil in the summer is allowed to get hard and impervious to rain, or is cultivated deeply, the whole tree is affected adversely. Any ploughing in summer should be very light, just enough to form an earth mulch and to allow rain into the soil. Cold, wet, heat and drought, when excessive, will chill, sour, dry and harden the roots, and so injure the tree. Where coarse weeds are turned in round the roots of the tree in winter and cold and wet come, the result will be dangerous, as they would serve as a host for the water and sour the ground: if left on the surface they would prevent the sun from warming the soil. In summer both of these things may be done and would be advantageous. The effects of heat and drought may be made less hurtful if proper treatment be given to the soil. The heat may be prevented drying up the roots by a mulch of light litter being put round the tree or a soil mulch given. The severity of drought may be lessened by the soil round the tree being "dished," so that when rain comes every drop of water will be caught by the tree and the soil mulch will also be of value

The Importance of Sound Leaves.

Leaves have a great influence on the flower buds, and according to their size and vigor will be the quality of the bud. They serve as the feeders of the buds, pumping up sap from the roots and elaborating it. So wherever any damage has been done to the leaves, the flower buds, and consequently the fruit, suffer. If a severe frost has come when the leaves are on the tree and nipped them, the fruit may be spoilt for that season. Hot winds, severe storms and hail may also damage the tree, and cause destruction to the season's crop. An injury to the bark also necessarily weakens that part of the tree which is affected. The wounded part should be cleaned, the ragged pieces cut away and clay put over the wound to prevent air entering, so that the injury sustained may be repaired.

The nature of the seasons has marked effect upon trees. The weak tree in a favorable season might be strong enough to bear, but if a severe drought comes it is too weak to bear. A strong tree in a good season would be too strong to bear, but a bad season would have just the weakening effect that the tree required, and so a good crop would be the result.

Good Drainage aids Bearing.

The uneven bearing of a tree is sometimes caused through bad drainage. On one side of the tree the water may lie at its roots, and on the other there may be insufficiency of water. The first position may suit a water-loving plant like the quince or a fig, but the dryness of the other side will perhaps kill that part of the tree or curl and shrivel up its fruit.

Orchard land must be drained. Clayey soils need draining more than sandy, for the latter are often naturally drained. Draining will prevent surplus water lying about in winter, and will conserve water for summer use. The more uneven the depth and the surface of the soil is, the worse will be the natural drainage. and the worse the drainage is, the more uneven will the fruit-bearing be. So any cost incurred by draining will be amply repaid by full crops.

What Cultivation Secures.

Improper cultivation plays its part in the irregularity of fruit cropping. The three principal foods that trees need are nitrogen, potash, and phosphoric acid, and lime may be added to these. These have all their functions to perform that the trees may be nourished and bear fruit. The nitrogen gives the deep green to the leaves and strong young growth, the phosphoric acid is required for the ripening of the wood, while the potash is necessary in the fruiting stage for the ripening of the fruit. Lime is a quickener of all three and other plant food salts, and so is always an adjunct to a soil. Trees for a while may grow and bear well on what there is in the soil, but there must come a time when, if nothing be given back to the orchard to replace that used up, nothing will be returned from the trees.

The trees can tell us themselves what they are needing. If they are making rapid growth and have deep green foliage, and mature their wood well, it shows they are well supplied with food, but if they grow slowly the second or third year after planting, and their foliage turns yellow, it shows they have need of food or moisture or both.

If trees make too rapid a growth on reaching bearing age, and show little inclination to fruit, it means they are getting too much nitrogen, so the planting and turning in of leguminous crops which have the power of collecting and storing up nitrogen must be discontinued.

Potash must be restored continuously to the soil, as the tree removes more of this component than of the others. It can be given as a manure in the form of kainit. Phosphoric acid can be given as bonedus, guano and superphosphates, and nitrogen by the turning in of leguminous crops such as vetches, peas, beans, lupins, clovers, etc. The whole of the orchard cannot be treated with manure salts, that would be too costly a business, but individual areas might be treated.

Cultivation also means the loosening and pulverising of the soil, which is done in orchards by the plough, the disc and the harrow. The two chief seasons for this work are autumn and spring: it is also done at other times, according to the need and the weather. If cultivation be neglected the trees will suffer to a considerable degree. Cultivation means the mixing and reblending of the soil grains, the exposure of fresh surfaces, and the opening of the top soil to allow air and water in. It can therefore be understood that cultivation is very necessary to the well-being of trees.

The Tree's Inner Nature

We have dealt so far with the tree as a whole, and the conditions affecting its health as a whole, but now we can approach the tree closer and examine its buds and flowers, and see if any cause can be found for irregular bearing.

The first cause will be found in the dropping of buds. Buds may form all over the tree, and a good crop may be expected. A great many of these drop off, leaving only a miserable crop to mature and ripen. When this dropping occurs on long shoots, the reason very likely is that there is not sufficient sap to support them all. The pruning is at fault, and this can be remedied by reducing the shoot and making it strong enough to bear what buds are left.

Another reason for bud dropping may be that the flow of sap is too strong in a shoot near by where a heavy cut has been made by the pruner. Do not prune the strong shoot hard or it will grow stronger, but thin out and expose it so that it may ripen well and bear.

An improper ripening season of the previous autumn will cause bud dropping: this may have been caused by a very mild summer or imperfect drainage about the tree, or the tree may have been too crowded. A great many flowers always fall, especially with apples and pears, a fortnight after the trees have come into flower, but this is Nature's own pruning and thinning, and one to be desired.

An early frost often plays havoc with buds, nipping them off when they are swelling to form flower buds. In stone fruits the flower buds are more subject to harm from cold than leaf buds. The weather of the season before the expansion of the buds exerts a potent influence upon the number of flowers formed: the weather also during the expansion of the flowers and the setting of the fruits increases or reduces the coming crop.

The imperfect setting of the fruit is another cause of irregular crops. This is influenced by the prevailing weather, so that one year the crop might be much heavier than that of another year. If a severe late frost comes when the fruit is just formed, it will be responsible for the dropping of the young fruit; and if cold, hail and rain are prevalent about this time, the fruit will get knocked down or damaged. Bad weather, especially cloudy weather, if it lasts some time, is very injurious to the fertilising of flowers.

Fruit trees are almost altogether insect fertilised (to a small extent, perhaps, they are wind fertilised), and in bad weather bees will not be out working. So the longer cloudy weather lasts the fewer will be the flowers fertilised, and consequently the less the fruit borne. Very windy weather blows the pollen away, and causes the flowers to be infertile. A great many of the tree fruits are infertile to their own pollen. For this reason an orchard planted with Bon Chretien pears will be found to be unfruitful, simply because of the infertility of their own pollen, that is, their flowers will not set unless their stigmas receive pollen from some other variety. So it is necessary that at least three or four different varieties should be planted in every orchard It is wise to plant together those varieties that flower about the same time.

Destructive Agents.

Another cause of imperfect setting is the presence of disease in the tree. Disease is always weakening to a tree, and it is those trees that are the weakest that disease most rapidly attacks. So to avoid disease the tree must be kept healthy. Especially are leaf-eating insects to be kept away from trees: the leaves are the feeders of the flower buds, and if they are eaten away and destroyed the buds will also perish. The peach aphis is very serious for this reason. It prevents both flower and leaf buds from opening well, and distorts the young shoots. When severe it will cause the leaves to fall at a time—October—when the tree has need of all its leaves. Where it is present the trees should be sprayed with Bordeaux mixture (6 lbs bluestone, 4 lbs lime to 50 lbs water) in winter, or with tobacco water (1 lb each of tobacco and soft soap to 20 gallons of water) when it appears in the spring. Fumigation, when the tree is in leaf, with cyanide of potassium is good, but expensive. To strengthen the tree so that it may throw off the disease, mulch the ground with tobacco refuse or manure salts, especially kainit or rock salt.

The pear slug damages the leaves of the pear, cherry, and plum, eating away the tissues and leaving only skeleton leaves, and so ruins the fruit. As the slug has a slimy coat, ashes or fine earth, or lime, thrown on to it will force it to curl up and fall to the ground, where it will die. A spray of Paris green (1 lb Paris green, 5 lbs lime to 300 gallons water) can be used where the pest is bad. For the larva in the soil, a solution of bluestone or sulphate of iron might be put into the ground.

Some of the fungous diseases are dangerous to the buds. The peach leaf curl is one of the worst. It attacks the leaves as they unfold, blistering them and preventing them from fulfilling their proper function of starting the buds in the spring. To remedy this disease spray with Bordeaux mixture in winter after the pruning. In spring, as the leaf buds are bursting spray again with one-third the strength. Never allow the old prunings or infected leaves to lie about so as to spread the disease. Some varieties suffer more than others, so do not plant them. Briggs' Red May, Crawford and Salway are in most soils good resistant varieties.

Black spot of the apple and pear causes cracking and distortion of the fruit if it comes early, and scurvy patches if it comes later, and very often the fruit falls off. Spray for this disease with Bordeaux mixture in spring, when the flower buds open. Some varieties of apples, Cleopatra, Ribston, and Filbasket, are very susceptible to it, and should not therefore be grown where the disease is bad.

Powdery mildew of the apple distorts the leaves and also affects the buds. To prevent it spreading, burn all prunings and spray with Bordeaux mixture in early spring and in winter stronger.

The pear phytoptus or mite damages the leaves by blistering them, and thereby causes the tree to shed its leaves prematurely, to the detriment of the fruit. Spray with kerosene emulsion ($\frac{1}{2}$ lb hard soap, 1 gallon water, 12 gals kerosene) or soft soap and sulphur (1 lb to 5 gals water) in summer.

Oidium or powdery mildew of the vine prevents the leaves unfolding properly. Dust with ground sulphur in the early morning while the leaves are moist.

Black spot or anthracnose of the grape attacks the fruit, causing a malformation in the fruit. Vines should be stripped of the loose bark and painted with Bordeaux paint (Bordeaux mixture with clay and lime mixed with it).

It can be seen from all these facts that a great deal depends on the start in life a young tree gets, whether it is at home in its surroundings and also whether it is built up properly and receives proper treatment all its life. These points decide the difference between a regular and an irregular tree, a paying and a non-paying one.

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STOCK

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Climate.

The climate and meteorological conditions prevailing, not only in different countries, but also during different seasons of the year in the same country, are well known to have an effect on the liability of both animals and man to disease; and this, apart from the much-experienced effect of change of climate (i.e., removal to a different climate), which, in many cases, may be considered as on exciting cause rather than a predisposing one. The widely held notion that the blood becomes thinner after continued sojourn in a hot climate, and is thicker in cold countries is erroneous. That the circulation of the blood may be more sluggish in cold countries than in hot, where the temperature influences function-energies, may be admitted; but that the blood itself is altered in composition, consistence, specific gravity, or fluidity, cannot be scientifically contended.

The circumstances which determine the influence of climate on causation of disease are not well understood, but in recent years light has been thrown in some directions on the subject. Many of those sub-tropical diseases, of which malaria is a type in man, and, say, redwater and South African horse-sickness in animals, are now known to be caused by micro-organisms, which are transmitted to them by the medium of certain insects, such as mosquitos and ticks; so that their occurrence connot be said to be directly due to climatic influences. Indirectly, however, they are, for the disease-conveying insects only flourish in latitudes where the temperature and atmospheric moisture are such as to favor their development.

The direct effect of atmospheric temperature is noticeable as a factor in disease. Apart from disease incidence due to sudden exposure to sun heat, long continued exxcessive heat induces debility and loss of tone and functional energy, leaving the system more open to attack by disease-producing agents. Conversely, the advent of frost, or excessively cold weather, may cut short outbreaks of microbian disease. On the other hand, long continued exposure to cold undoubtedly tends to lower vital energy, and so predisposes to disease. It has been frequently observed in America that the greatest prevalence and mortality of swine fever occurs in the southern States during the summer, and in the northern States during the winter months; periods when the conditions of temperature and climate are such as to diminish the natural or physiological resistance to disease.

Lung affections are much more prevalent in low-lying situations, with a moist foggy atmosphere, while horses and cattle reared at high altitudes, where the air is more rarified and dry, are well known to have more hardy disease-resisting constitutions.

Locality.

Certain diseases are observed to be more prevalent in some districts than others, and the increased prevalence can, in a number of instances, be shown to be due to local conditions of soil and weather, or to localized customs of management. Fluke in sheep only prevails on low, marshy, or wet land, suitable for harboring the particular kinds of fresh water snails (physae), which are essential to certain stages in the life of the fluke parasite. In like manner anthrax, rheumatic affections, dysentery, Australian stringhalt, intestinal parasites, occur mostly on similar country. Foot-rot in sheep is known to be of most frequent occurrence on very wet land, with a clay subsoil, or on dry gravelly country. Sand colic, impaction and paralysis of the bowels in horses are more prevalent in dry sandy localities, where the soil is devoid of surface humus. In the wind and rain-swept gullies and ranges of Gippsland, and other hilly country, febrile diseases, colds, bronchitis, and other lung affections are more severe than in less tempestuous localities, and when contagious or infectious diseases, such as pleuro-pneumonia, swine fever, and strangles, obtain a footing in such districts, their spread is more rapid, and they are more fatal. In Australia the disease of horses known as "nasal disease," which is really a form of osteoporosis, is noticed to be more common in certain localities, as is also goitre and rickets in sheep. Similarly "coast disease" or "cripples" when first of a character to demand attention, was almost confined to the coastal districts.

Soil Exhaustion.

The subject of soil-exhaustion, which is destined to loom largely in connection with the health and well-being of stock in Australia, may be given brief attention here, for it is, in a great measure, a question of local stock management or agricultural customs. Ever since shortly after the sheep industry got firmly planted throughout Australia, it has been known that certain tracts of country would become, after a shorter or longer lapse of time, "sheep sick," and now, at the end of fourteen or fifteen years from the establishment of the dairying industry some areas, in Victoria at least, are suspected of being "cattle sick." This means that the virgin land, through continuous grazing without manurial or cultural assistance, has become deficient in certain mineral constituents, and that consequently those plants, to the growth of which such mineral matters were essential, have died out, and plants of inferior quality, so far as milk production (or, in the case of sheep, wool production) is concerned, have taken their place. In other words the grazing of one class of animal on the same land for a number of years has almost completely altered the character of the herbage, and while the pasturage may look as well as ever, and may be as good for grazing another class of animal, its "substance" for the purpose for which it has been used, has vanished. It is estimated that the amount of nitrogen lost to the soil by means of milk removed from the farm averages 45 lbs per cow per annum; of phosphoric acid and potash from 6 to 9 lbs each. Taking even good land that will carry one cow to 3 acres, it will be seen that the land is being exhausted at the rate of 15 lb of nitrogen and 2 to 3 lbs of phosphoric acid and potash per acre per annum

Throughout a period of prolonged drought, this form of soil-exhaustion is more quickly effected. Most of the chemical elements which form the mineral food of plants exist in some form, and in minute quantities, in the air, and may be brought down and supplied to the soil by means of rain. The amount of nitrogen in the form of ammonia that is carried to the soil by rain in country districts during an ordinary season is equivalent at 44 lbs per acre per annum. In the neighborhood of towns a greater amount is deposited, and therefore it is not in respect of nitrogen that the soil becomes exhausted. But phosphoric acid, in the form of phosphate of lime, is deposited by rain to the extent of only half a pound per acre; so that the deficiency produced by grazing milking cows is not made up for naturally, and exhaustion of this essential soil constituent goes on at the rate of at least 2 lbs per acre per annum—an amount equivalent to 10 lbs of 20 per cent superphosphate. In dry seasons the adventitious supply of mineral matter, by means of rain, fails, and the deficiency becomes more pronounced.

Overstocking.

The subject of overstocking may be briefly adverted to. Apart from the ill effects of continuous grazing just mentioned, and which become much increased when paddocks are overstocked, and apart also from the actual fouling of the herbage by excess of animal discharges, and by "the tramp of many feet," there is the further disadvantage that the good grasses are continuously eaten off as they shoot into growth, and are thus prevented from seeding. In this way the extirpation of much wholesome herbage is hastened. At the same time, useless or actually harmful and noxious plants which are not eaten by stock until the pasture is bare of nutritious grasses, are allowed to seed, until eventually the innutritious herbage predominates, the good grasses having been eaten out A familiar instance is the gradual usurpation of a pasture by Yorkshire fog grass (holcus lenatus) where this grass has been sown with sweeter grasses; the latter are eaten down continually, while the fog is neglected by stock owing to its harshness, and being a strong grower, it soon takes possession of the pasture. Again, the well-known rib-grass or plaintain (plantago lanceolata) being much relished by sheep, is a useful grass on sheep country; cattle, however, neglect it, and on cattle runs it quickly becomes a nuisance, not only on account of its spread, but because its flat habit of growth entails great waste of ground surface that could otherwise be utilised by more suitable grasses. Even in times of plenty, the folly of overstocking is not less acute, for then the noxious plants are left still more severely alone to propagate and spread their baneful presence over the pasture, occupying ground that would otherwise accommodate herbage of more nutritious character.

Truly the factors operating towards deterioration of Australian pasture lands are many, and deserve thoughtful attention and action on the part of all concerned. At the risk of being charged with uttering a libel on the common sense of Australian farmers, a protest must be here entered against the suicidal and wasteful practice of burning off seeding grass during bountiful seasons, a practice which is carried out by not a few farmers in some highly-favored districts. They fear bush fires, and instead of mowing the super-abundance of seeding grass, and turning it into hay or ensilage, as a standby for a time of scarcity, they thoughtlessly resort to the characteristically improvident method of the "fire stick."

Environment.

Unwholesome surroundings may, according to their character and intensity, be such as to excite disease or predispose the animal to an attack. Vitiated atmosphere, as a result of deficient ventilation and perflation, is often a contributory cause of pneumonia, influenza, and other debilitating diseases in stabled animals. So noticeable is the effect of insanitary surroundings on the occurrence and spread of certain diseases, that it has become customary to group them together under the term "filth diseases." By this is meant, not so much that filth in itself will cause these diseases as that their causative germs will find in the unclean surroundings—deposits of dung, manure, and rubbish, stagnant drainage, and the like—ideal conditions for maintaining germ life. As instances of such filth diseases, Fetanus (lockjaw), and influenza in horses, anthrax and abortion in cattle, swine fever and fowl cholera may be mentioned.

Want of cleanly surroundings, especially of working horses, encourage skin diseases, such as mange, eczema, psoriasis (mallanders), crackled heels, mud fever, and grease. "Foul in the foot" of cattle, and foot-rot in sheep are other cases in point.

Species or Kind.

Certain diseases are peculiar to certain kinds of animals. Animals of the cattle tribe are alone liable to contract contagious Pleuro-pneumonia, Tick fever, Black leg, Milk fever, and Rinderpest. Strangles, Roaring, and String-halt are peculiar to horses, and no animal but the dog is ever affected with Distemper: while Swine fever, Multiple abscess (Lymphadenitis) and roup are examples of disease which are confined to pigs, sheep, and fowls respectively. In addition to typhoid fever, syphilis, and appendecitis, a whole host of diseases could be mentioned to which man olone is liable.

Conversely, certain diseases never affect certain kinds of animals. Cattle are completely exempt from Glanders, horses from Foot-and-mouth disease, dogs from liver Fluke, sheep from Purpura, and pigs from Redwater. Donkeys, mules, and goats are peculiarly insusceptible to most of the diseases which ravage the closely allied species—horses and sheep. Thus donkeys seldom suffer from any of the bony affections which are so common in horses, and they, as also goats, are practically immune against Tuberculosis, Anthrax, and the virulent affections of closely-related species. Such diseases, as Foot-and-mouth disease in cattle, Glanders in horses, Rabies in dogs, and Fluke in sheep, while being primarily bovine, equine, canine, and avine diseases respectively, may also affect other species, but in such cases the attack is frequently much modified in type and milder in form.

Frequently anatomical and physiological differences may determine the incidence of diseases peculiar to a species as in the case of appendicitis in man, Sidesbones and Roaring in horses, and Foot-rot in sheep; but what the influence is which determines the iufluence on particular species of animals of the diseases mentioned in the last but one preceding paragraph, is not satisfactorily known. Some light has been thrown on this aspect of the incidence of diseases by researches on the subject of immunity whereby it may be speculated that differences in chemical composition and physiological affinities of the component parts of blood cells and blood serum of different animals may account for the susceptibility of some species over others to special diseases. This subject will be more fully discussed under the heading of "Immunity"; for it may here be said that the most hopeful prospects of elucidating the problem lies in those directions to which serum-study leads.

(To be continned.)

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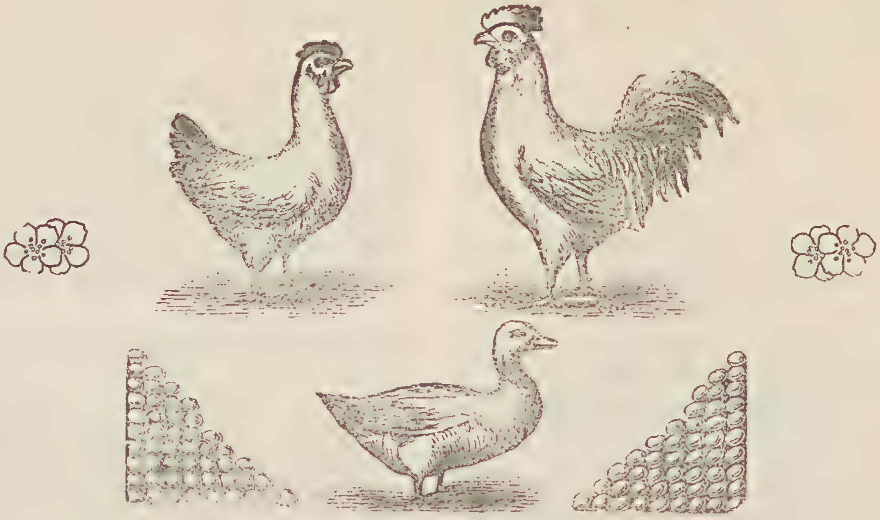

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Export Poultry.

By D. F. Laurie.

There have been various expressions of opinion of late as to the requirements of the London market. The matter is very important, as, unless the class of bird approved in the English markets be sent, loss and disappointment will result.

Condition.

There is an excellent market for young, well-fleshed birds, and a poor one for ill fed specimens. A specimen laden with fat is not the quality demanded. Heavy weight and accumulations of fat are disliked. What is required is abundance of meat of fine quality, and not a super-abundance of fat. This matter is well recognised in Canada, where they copy, as closely as possible, the methods adopted in the Heathfield fattening establishments in England. Our breeders would do well to study this question even for the local market. There can be no doubt that it pays neither buyer nor seller to deal in half-starved birds. The condition that is suitable for a bird intended for stock or show purposes is not suitable for a market fowl.

Canadian Experiment.

The following appears in the evidence given before the Select Sanding Committee of Agriculture, Canada, by Professor J. W. Robertson:—"I brought in the market, Ottawa, 101 chickens, just as they were brought there alive to be sold for food. I did not get the best on the market, and I would not take the worst. When I got these chickens home I killed three average chickens as soon as I could. I selected them as a fair average of the lot. I had them dressed and steamed until they were fairly tender. After being steamed they were put aside, wrapped in napkins for two days. During that time they probably lost a little in weight, but not very much as they were wrapped up. I then took them and carefully removed all the edible portion. I found that the edible portion on these three chickens weighed 2 lb 6 oz. They were a fair average of the 101 chickens which I had bought. After I had fed the chickens for five weeks (and mine were not fed by the cramming machine), I again selected three chickens, as nearly the average as I could select them, and killed them. I treated them in precisely the same way as the first lot. After removing the edible portion I found that I had 7 lb 6 oz off the three. That is, I had more cold chicken for the table per chicken from those which had been fattened than I had of the whole three that were killed before being fattened." It must, of course, be noted that the fattened chickens were thirty-six days older than those killed before fattening.

What London Does Not Like.

London poulterers have a strong objection to poorly fleshed birds of any sort. They object to prominent breastbones, or too much leg—the leg is an inferior part of the bird. Dark or black legs are much disliked, no matter how good the quality of flesh and condition. Yellow skin and flesh are disliked, although a creamy tint will pass muster. Very large birds, or those which, by much running about, have become muscular, are not appreciated. Coarse, overgrown birds will not command good prices,

What Will Suit.

Plump, white-skinned and flesh chickens, say, 14 to 18 weeks old, and ranging up to 5 lb weight. Yellow legs will pass muster as long as the skin on the body of the chick is not too pronounced in color; as stated, a creamy tint is not disliked. The birds most suitable for the production of the best table fowls for the purpose in view have been stated many times. At the risk of imparting stale news, I will again give them, pointing out that the introduction of Game blood (Old English o Indian) as a first cross only, will give that round, well-fleshed breast so much liked, and in contrast to the prominent, wedge-shaped breast disliked by the buyers. Buffs or White Orpingtons, all the Wyandottes. Favorelles, Dorkings, Plymouth Rocks (such as are bred in Canada, with creamy skin), all these crossed with the Game will give ideal birds When bred pure there is always a risk of trouble with breastbone. The crosses lay on flesh very quickly. Leghorn. Minorca, and other light breeds are not suitable, The English buyers are experienced, and can tell each breed, and besides, these birds, as a rule, do not plump up. There is a market for them as squabs and broilers in America, but not in England. Mongrels have been proved unprofitable, and are, in addition, very uneven in quality.

Fattening Establishments Wanted.

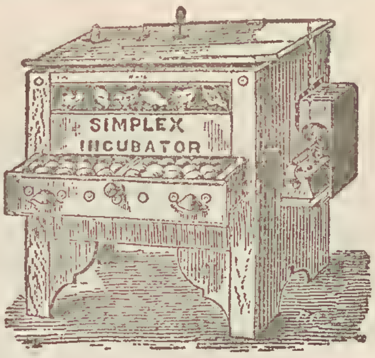
There is a great want in this direction, and I am sure an enterprising person could do exceedingly well in this branch of the poultry industry. One strong reason I have for advocating the establishment of a fattening depot is that individual breeders will find a very great difficulty in shipping a well-graded sample. A fattening depot could well afford to pay a satisfactory price for both lean and fattened chickens, ducklings, etc. The lean ones they could fatten, and, with others, carefully grade and ship, say, first and second quality, or first, second, and third sizes. It is, of course, imperative that the contents of each crate be graded to at least ¼ lb; that is, there should not be any two birds in tho crate differing in weight more than a quarter of a pound, and here large numbers to choose from are needed. The crates should be branded with gross and net weights, and also first or second quality This would be difficult in private shipments. As already stated. the Utility Poultry Club will find a difficulty in this direction, as it is intended to receive, pack. ship, etc., each consignor's birds separately.

Fattening.

In England birds are fattened in coops by trough feeding, and also by aid of cramming machines. The coops are 6½ feet long and about 16 inches square (inside measurement); each coop is again divided into three compartments. The duration of the fattening process is about three weeks by trough feeding and about a fortnight by crammer. In front of the coops V-shaped troughs are placed and in these the food is placed, The consistency of the food is that of thin porridge, so that from the end of a wooden spoon it will drop off, but not run. The food used in England is a mixture of ground oats and skim milk—sweet or sour (preferably sour). The oats are very finely ground, the hulls especially being reduced to dust. Canadian experiments find finely ground oats. including the hulls or husks, give equal results when compared with hulled oats finely ground; the extra firm grinding is important The birds are fed three times a day, but are kept hungry for the first ten days; during the next ten days one pound of tallow for each 70 chicks is mixed with the food, and after that until fat one pound of tallow for each 50 chicks is allowed; the meal mixture is used slightly thicker after the first ten days. Flour of sulphur is used as a vermin destroyer.

Coops.

The bottoms of the coops are made of slats or battens, so that the droppings may fall through. These bottoms should not be fixtures but should be laid on trestles, and the top structure of the coop placed upon them: this will facilitate cleaning. The battens should be of hardwood, well tarred over with hot tar; the tops may be of wood, but galvanized iron, with wire fronts, although more costly, is most lasting, and preferable from a health point of view; scrupulous attention to cleanliness is necessary. As fattening here will take place during warm weather, the coops should be kept as cool as possible, and may be placed in low sheds; in the country these may be of a light framework, covered with wire netting, and thatched. the thatch held in place by means of a covering of large-meshed wire-netting. Vermin must be guarded against, and for this reason iron coops are far better than any others. The birds should fast from 24 to 30 hours before being killed.



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The May Number of . . . .

The Australian Gardener

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THE FLOWER GARDEN.

Floriculture.

By the Observer.

When the soil is dry it is safe to spread manure in plenty and dig it under. If it has not been kept and turned three or four times during the year there will be a lot of weeds. But there is great loss through keeping stable manure or similar stuff, and it is more economical to spread it at once and cover it if possible If it is left on the surface and gets dry there will be little waste, because there can be no development of ammonia unless there is fermentation, and this cannot occur without moisture When the raw manure is covered with soil the fermentation commences, ammonia is developed, and is at once combined with the soil. If the bed is not occupied with other plants the weeds can easily be dug under, and the soil will be further enriched by their decomposition. When the soil is wet it is injurious to walk on it, because clods will be formed, and these may remain unbroken for a long time. If planting must be done upon wet soil, it is advisable to place bricks on either side of the bed, place a stout plank on these, and then plant from the improvised platform.

Plant out all kinds of hardy annuals, and allow plenty of room for development. It is a common mistake to plant thickly, and when the plants begin to flower they are so crowded that best results cannot be secured. The best way to put a plant in is to take out a trowelful of soil, spread the roots evenly, throw on a handful of soil loosely, not in a lump, then fill in the rest, and press it lightly down. A better way still is to plant with a ball of soil attached to the roots. A common way is to make a hole with a dibbler, hold the plant by the neck or leaves, drop the roots straight down the hole, and fill or press the soil against the roots. Directly after planting give a good supply of water. Among the most desirable annuals and perennials for present planting are annual chrysanthemums, ageratum capensis, alonsoa, anchusa, anemone, japonica, carnations, and all others of the dianthus family, acrocliniums and other everlastings, commelyna coelestris, geum, stocks of all classes, pentstemons, petunias, and phlox (in warm corners). Of course there are a great many other most desirable flowers, but the list would be too long. If there are none of these in the nursery beds the seedsmen and nurserymen can supply many in small pots.

Continue sowing small lots of hardy annuals to provide plants for maintaining succession of flowers. If the whole of the seeds are sown at once there will be a glut of bloom for a short time, followed by bare beds of ragged plants going to seed. It is of no use to sow seeds in the open beds, because the birds will scratch them up at once, or else the slugs and snails will eat the germs directly they peep through the soil. If the plants escape the enemies they have to fight drought and other effects of the weather. By raising plants in nursery beds or in frames they can be looked after with a minimum of trouble until they are large enough to plant out.

Do not dig deeply about the roots of trees and shrubs, as that will mutilate the roots and cause the tops of the plants to die. The great majority of gardeners hold the mistaken belief that it is necessary, especially in hot climates, to force the roots down into the subsoil, where they suppose there is a more certain supply of moisture. The roots of all plants require air, warmth, and moisture, as well as material for building up the leaves, branches, and other parts. All these requisites exist in the greater quantity nearest the surface. Nature does not dig with spades, nor try to force the roots down into the raw, crude, dense subsoil, except in regard to anchor roots. The surface is covered with old leaves, twigs, grass, and similar mulching, and worms, insects, and other agencies open up the ground and let in the air. We should follow Nature, and keep the surface loosened constantly, to let air into the soil, allow absorption of moisture from the air, and prevent rapid evaporation from below. Some extensive experiments conducted by the American Department of Agriculture have proved that plants are doubled in bulk and size by maintaining a loose condition of the soil to a depth of three inches, neither much more nor much less, as compared with trees that were left uncultivated.

Plants which send up many stems from a centre below the surface, such as antirrhinums, chrysanthemums, plumbago, and pentstemons, may be taken up, divided, and replanted in fresh spots, after cutting back a good lot of the top growth. If left too long in one spot, these plants will become ragged and unsightly. Of course, the chrysanthemums should not be dealt with until after the flowering is over. When the flowers begin to open they will drop on the ground, unless they are supported by stakes and string tied around. Do not tie the shoots up like a stable broom, else the leaves will sweat and the flowers will be injured. Every plant must have light and air admitted to all parts above ground.

Continue to plant hardy bulbs, etc Each of these should be enveloped in sand, so that the clay in the soil shall not come into contact. The best soil for such plants is a rich, sandy mould, enriched with old manure from a cowyard or sheep pen. New stable manure is not at all suitable to bulbs, tubers, and the like. Bulbs should be covered with soil to their own length—if the bulb is an inch long, it should be an inch under the surface. Hyacinths can be covered three inches. Corms, such as gladioli, may be covered half an inch, cyclamen with the crown just above the surface. Anemones and ranunculi should be buried an inch deep When the flower stems rise they should be supported with wires or light stakes. Never remove any leaves from bulbs until quite dry, else the bulbs will be weakened for next year's work. Oxalis can be killed by constantly removing the leaves directly they appear.

Slugs and snails can be trapped wholesale by taking out a spadeful of soil, putting in a handful of weeds, cover with a short board, with room for the pests to crawl beneath. In about three days the weeds begin to decay, and the pests hide among them every night In the morning take a bucket around, with a little salt in the bottom, shake the slugs and snails off into the bucket, replace the weeds and board, and go round every morning for a week or so collecting the spoils.

If there are too many plants crowded on the borders of the greenhouse remove some of the least valued, and place them in the open beds, When turning them out of the pots look at the roots, and if they are coiled around the ball of soil straighten them out, without breaking the soil, and spread them naturally in the bed. If any roots are mutilated cut them back to sound, uninjured root. Attend to watering until the plants have taken good hold, else they will probably die, because they have been used to regular watering in the greenhouse. Many plants which we have been accustomed to grow only in the houses will do far better in the open air. A deal of useful knowledge as to the character and requirements of ornamental trees and shrubs can be gained from visits to the Botanic Garden or to the larger nurseries, where they can be seen in the beauty of their perfection,

Loosen or remove altogether, as may be required, the ties on recently budded roses, and secure the young growth to splints of bamboos or light stakes, else the wind may blow off the new growths. If the ties are left too long unattended to the growth will be strangled. At the end of this month commence to prune roses and plant cuttings. In pruning standards it will be well to leave rather long arms, projecting like the ribs of a parasol, so that the leaves in summer may shelter the naked stem from the hot sun, which, in many cases where this is neglected, kills the bark on the western aspect. In planting cuttings of roses or anything else cut straight through, the shortest way, below a bud, Leave three buds on each cutting, plant with the top bud just above the surface, and placing the bottom end into close contact with the soil. Roses do well with plenty of old cowyard manure mixed with the soil. They do not like to have other plants close by, and yet they require shelter against wind They need good exposure to light also.

The rake and the hoe are both very useful in their way, but do not use the rake to take off all the little rich clods and pellets of rich soil on the surface. Break these up and scattar them. The hoe is more useful, because it chops off weeds and loosens the soil to let in air. If old leaves and similar matter cannot be buried by the hoe it will be necessary to rake them off and carry them to the compost heap; but nothing of this sort should be wasted. If the gardener is very wealthy he may burn the rubbish and buy his fertilisers: but he will then get as good results as the man who makes his own compost and potting soil. The use of chemical manures may be carried too far, because the friability and mechanical composition can only be maintained by the inclusion of a lot of decayed organic matter. Still, superphosphate of lime or other phosphatic manure, potash in some form, and nitrogen are essentials to plant life.

Take up dahlias when the top growth has dried, but not before. Be careful not to twist or mutilate the ligule connecting the tuber with the crown. If the crown is split into as many pieces as there are tubers attached the plants can be packed away more safely in chaff or dry sand until the end of September. All tender bulbs, etc., should also be lifted and put away in dry sand in a warm place until the hot weather begins to warm the soil.

Buffalo grass will flower but not produce seeds in this State. When the grass has flowered mow it close down, manure with short dung from the stable, sow seeds of perennial rye grass on the surface, and cover with fully an inch of the sandy mould. Give a good soaking with water, and in a few days there will be a nice green carpet. Make a mixture of 3 cwt each of bonedust, nitrate of soda, and 1 cwt sulphate of potash, and sprinkle over the lawn at the rate of 4 lb to each rod of lawn at intervals of a fortnight. Do not plant couch or buffalo grass until September.

The Shadehouse.

Remove all plants that are about to flower to the benches of the greenhouse, but do not crowd them, else more harm than good will result from the change. There they will keep in bloom longer. Pinch off any straggling points on ericas and plant them in peat with a bell glass over. Cut back hydrangeas and replant into clean pots. Zonale pelargoniums can be cut back at any time, and will usually begin to bloom about 12 weeks later. Cineraria, mimuli, and several other rather tender plants can be grown in a shadehouse. Numbers of the plants termed "half hardy" by British and Continental gardeners could be readily grown in the shadehouse or even in the open air in this climate.

The Greenhouse.

Chrysanthemums should have only just enough water to keep them fresh, so that the flowers may last longer. When the flowers are done cut the plants close down, give them no water, but turn them outside; leave them till a number of young shoots have been produced, then pull the plants into pieces, replant the strongest and best rooted in medium pots, and plant the rest in the open beds if wanted. At first the plants will not require much water, but as they develop they will need potting up and more water, with a little weak liquid manure occasionally.

All potted plants in the shadehouse which are about to flower should be brought into the greenhouse and placed on the benches, but not crowded together. Make plenty of room for them by removing all hardy plants not flowering to the shadehouse. Whilst in flower limit supply of water to bare requirements, else the stimulation will hasten maturation of the flowers Azaleas, camellias, and similar hard-wooded, shrubby plants must not be heavily watered, else they will throw off their flower buds, and they must not have manure of any kind at any time. The only safe thing is a little humus or peat. If camellias are too crowded with flower buds some may be removed.

Place pelargoniums where they will have a strong light, but not direct sunlight, through glass, plenty of air, and lots of room around. Every plant on the benches should have a good free space around for light and air. When the roots reach the sides of the pots the plants need to be shifted into the next larger sized pots. It is not desirable to place them in much larger pots, because the warmth of the outside of the small pots stimulate growth. To find whether the roots have reached the sides of the pot, place two fingers on each side of the plant, close to the soil, turn the pot upside down, tap the edge of the pot gently on top edge of the bench, when the ball of soil will come away from the pot. Be careful not to break the ball. If the roots are showing have a larger pot ready, throw in some broken potsherds for drainage, put in a little soil to raise the ball of soil level with the edge of the pot, place the ball with plant in the centre of the pot, fill around with good potting mould, press lightly down, give a little water, and place the plant in a sheltered corner until it has recovered. Palms and similar plants need to have the new soil pressed down rather firmly. Primulas will grow up with very weak stems, and for this reason it is usual to pot them rather low, and then fill up when the flowers begin to show. They are rather gross feeders, and it is well to give them a little weak liquid manure twice a week. The nature of the liquid manure should be changed so as to give variety. Sometimes some soot may be put in the tub, or a little horsedung, or a very little sulphate of ammonia, or some kainit or nitrate of potash, but never make the liquid too strong.

Pot out cinerarias in rich, loamy soil at short intervals. They will do best in a cold frame. Pot calceolarias into small-sized pots. Watch them carefully for slugs and snails. Plant a few narcissi, hyacinths, and tulips, and a few 10-week stocks in pots for decoration of the place. Strike cuttings of coleus, fuchsia, and other plants.

Except when the weather is very cold and windy, the house may be kept open from 10 a.m. until 4 p.m. The underside or inside surface of the glass should be shaded by dabbing on with a sponge a mixture of whitening, with stale beer or sugared water, to prevent the sun scorching the plants.

Turn tuberous begonias out into the shadehouse. Sow seeds of mimuli, including musk; also calceolaria, cineraria, gloxinia, and tydaea.

Fuchsias want frequent syringing. It is always well to have a number of young plants of these, and it is easy to strike cuttings at any time, either from matured or from very young growth. Cover the cutting with a bell glass, and the work is still easier.

The Stovehouse.

When possible give fresh air, but never let the temperature get below 60 deg. F., nor above 70. Do not allow the direct sunlight through the glass upon plants. Always use tepid water from tanks for the plants. Cleanse every part of the house with hot limewash. Clean the outside of each pot with warm water and a soft brick. Watch for snails, slugs, and other pests.

Achimenes, dioscoreas, gesneras, gloxinias, tydaeas and amarantus must not be watered now, Caladiums should either be repotted when the leaves are off, or the soil should be shaken from the roots and the plants put away in dry sand in a warm, dry corner.

Do not repot other plants now. Crotons, dracaenas, palms, and other stiff-leaved plants should be washed on both sides of the leaves with a solution made by boiling four ounces each of quassia chips and soft soap in a gallon of water, using a soft sponge, then rinse with clean tepid water, and keep the house closed until next day.

The Fernery.

Do not water too much, avoid repotting, look out for pests. Remove all tender ferns to the stovehouse. Keep the place closed except when outside conditions are mild. Do not syringe plants.

Pits and Frames.

These should be full of seedlings and cuttings for all parts of the garden. Keep one frame especially for fumigating insect infested plants.

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THE ORCHARD.

Orchard Cultivation.

Mr. A. Moore.

This subject is as important for the growth and health of the young trees as winter and summer pruning and spraying, etc., are for the growth and quality of the fruit on the trees; and as an orchardist cannot expect trees to fruit well, and at the same time to be of good quality, without intelligent pruning, training, and spraying, neither can he expect to have good, strong, healthy trees without generous cultivation. We notice in some gardens young trees planted, and from that time left a good deal to themselves, but not to their advantage. Such trees are usually very poor compared to those in an orchard that has been well cultivated at different times with plough or spade. I say spade, because a good deal of cultivation is done with the spade or fork in the hills, where it is almost impossible to get a plough to work in some places, owing to steepness. The plough, when it can possibly be used, is the best; but there is a difference of opinion as to what kind of plough is the most suitable. The objection to the garden plough is that in some soils it is unsatisfactory, owing to its short mouldboard, which pulverises well in a loose suitable soil where there is not much grass; but in a stiff soil, with grass, it drags and does not bury the grass. The long mouldboard field plough does better work in most soils, and buries all the grass and weeds. There is not much danger of over-cultivation in most kinds of trees, especially orchards from one to six or seven years of age. To pay the cost of the cultivation a good plan is to crop the land between the trees. This can be done for some years without hurting the trees, taking care to keep the crop a reasonable distance from them. Peas and vetches are both useful, as they leave a certain amount of nitrogen in the ground. One objection is that they get close around the trees, and have to be hoed away after coming up. The best crop for the hills is potatoes, as they can be planted well away from the trees, which are benefited in the same proportion as the crop of potatoes is benefited by cultivation. An orchard under this method can be made to pay all planting expenses and cultivation expenses until the time it comes into bearing, say five or six years. Trees cultivated and cropped in this manner do not show any signs of having too much nutriment extracted from the ground, but the reverse, as, owing to the intense cultivation, they thrive wonderfully. In orchards that are situated in very damp ground, and inclined to be flat, and hard to drain, it is a good plan to work the soil up towards the line of trees for a year or two, so that it slopes off towards the centre of the row, and drains the line of trees. Trees in damp soil do not thrive as well as those on higher ground. After an orchard has reached the age of 10 or 12 years and older, difficulty is experienced in working the plough with any degree of satisfaction, and anything that will enable the plough to work up close to the trees is a great consideration, as it makes less digging in between the rows of trees. In a large orchard digging a wide strip is fairly expensive, and although some digging is necessary, the less the better. I have found it a splendid plan to put the ordinary single feed plough on one extreme end of a long harrows swing, putting the harrow on the other end, and putting the horse in the centre, or as close to the centre as will balance the plough and harrow. By this means one man to plough, and one man to drive the horses (two horses are necessary), can plough an orchard quite comfortably, and get quite close to the trees, no matter how much they spread, and the plough does not require more than the ordinary holding, owing to the draught being central. The horses walk up the centre, turn after turn, scarcely touching the trees, and, in addition to ploughing, a certain portion is being harrowed at the same time. This saves a wonderful amount of digging, and brings down the expense of cultivation very considerably.

Machine-wrapped Oranges.

We have the following additional information about this device in a Florida, U.S.A., paper:—

The advent of California oranges into the markets wrapped with labels bearing the stamp, "Machine-wrapped fruit, not handled by hand," makes information about the type of machine especially interesting.

The machine is attached to the end of the grader, and receives the oranges direct. It is simple in operation, compact, and perfectly automatic. It receives the fruit on an endless chain attached to which are a series of cups, felt-lined and separated by rubber partitions. The wrsppers are cut from a roll, after the manner of a perfecting printing press, and, after being printed, are cut the desired size, when they are ready for the orange. A unique device twists the paper perfectly tight about the orange, which is held in place at the top by a rubber-plunger, while the other end rests on a felt-topped rod. The ends of the orange are in this position, and so closely is the orange wrapped that it is believed it will be practically impervious to moisture.

A feature of the machine that will appeal to packing-house men lies in the fact that a smaller-sized paper can be used than in hand-wrapping. Thus, a nine-by-nine wrapper would be used on the machine, while in hand-wrapping a ten-by-ten wrapper would be required. A saving of 20 per cent. of paper is claimed as well as far superior wrapping. Another advantage would lie in the fact that no large stock of assorted wrappers would be required, since the machine can be adjusted to any size, and the roll paper only would be needed. The printing of wrappers would also be done away with, since the printing is a part of the wrapping process.

To prove that the machine will not mar the skin of the fruit, eggs have been run through the machine and wrapped without cracking a shell.

The machine wraps 72 oranges a minute, or 40,000 pieces of fruit every ten hours. It would wrap a carload in one and one-half days. For the ordinary packing-house, five machines would be necessary to handle the fruit.

Practically all the packers in the city have inspected the machine, and all are enthusiastic over its possibilities.

With labor a scarce and high-priced commodity in California, this invention ought to be a great factor in making the citrus business pay better profits.

Studies on Apples.

W. D. Bigelow, H. C. Gore, B. J. Howard.

Details are given of an extended investigation on the chemical changes which take place in the storage, respiration, and growth of apples and on the insoluble carbohydrates or marc of apples. The results of microscopic and macroscopic examinations of apple starch are also given. Preliminary to the experimental details an extensive review is given of the work on the ripening and respiration of fruits as observed by many other investigators.

In the present work the varieties Ben Davis, Bough, Early Strawberry, Huntsman, Northern Spy, Rhode Island, Winesap, Winter Paradise, and Yellow Transparent were used. These are described and the nature of the soil on which they were grown noted. Analyses are given of these varieties when picked at different dates and when held in common storage and cold storage. From the results secured in this work it appears "that the changes in composition (the content of starch, sugar, and acids) in cold storage do not greatly differ from those which occur in common storage, the chief difference being in the rapidity with which the changes take place."

The results of respiration experiments with apples in common and cold storage indicate that the fruit kept in common storage at the higher temperature ripened much more rapidly than that kept in cold storage. In comparing the amount of carbon dioxid eliminated from the fruit in these experiments with the malic-acid curve, it did not seem possible that the carbon dioxid could be accounted for by the disappearance of malic acid, as some other authors have considered to be the case.

"On the other hand, the curve representing the content of total carbohydrates, expressed as invert sugar, is approximately the reverse of the curve representing the evolution of carbon dioxid. The probability that the carbon dioxid results from the decomposition of carbohydrate bodies is strengthened by the fact that after protracted storage the apple has apparently lost vitality, and changes in composition proceed much more slowly than in the early days of storage."

In considering the growth of apples, the work was not begun until after the "June drop" was over. It was found in this work "that the less mature the fruit is when gathered the more rapid are the changes tending to maturity after picking. It would seem, therefore, that from a commercial standpoint apples which are fairly mature may be expected to retain a more constant composition than those picked in an immature state."

The differences in the chemical changes which occur in the growth of winter and summer apples are traced in considerable detail. It was found that green apples ordinarily mature much more rapidly when stored than when left on the tree and that the apples picked the earliest mature more rapidly than those picked at a later date. The methods of analysis followed by the authors in this work are given in detail, together with methods followed by other investigators along the same line.

In the work on the insoluble carbohydrates or marc in apples a review is given of the characteristics of pectin bodies as observed by many other investigators with different fruits and vegetables. A table is given showing the results of analyses by the authors of apple marc. In the microscopic and macroscopic examinations of apple starch it was found that the size of the starch grain varies widely according to the condition of maturity of the fruit. A table is given showing the results of measurements of starch grains from several varieties. Generally speaking, the starch grains from within the core line are smaller than those from the torus flesh. In the ripening of apples the intercellular air in the flesh of the fruit seems to increase constantly as the fruit approaches maturity. The specific gravity appears to diminish from 2 to 5 per cent.

The "mealiness" of apples was found to be due largely to the softening of the middle lamella of the cell walls which occurs in the last stages of ripening. In mealy apples the cells under pressure are, for the most part, separated from each other instead of being torn apart individually as in less mature fruit. Mealy apples may contain as much juice as apples not so ripe, but do not appear to because of the separation of the cells instead of their splitting or tearing apart in crushing. Photographs are given showing the starch content of apples and its position in the apple at different stages of maturity.

Japan and Hybrid Plums.

H. N. Starnes.

Generally speaking, the Japan and hybrid plums are much more useful in Georgia than native or European varieties. "They are larger, handsomer, better shippers, and usually firmer and of finer quality than any of the natives, except certain members of the Americana and Miner groups They are also, as a rule, less subject to curculio." From the data given in the tables of blooming and fruiting, it appears that more than half of the varieties that are earliest to bloom are latest to ripen fruit.

Among the maladies of plums special attention is given to "wilt," crown gall, and the borer. The "wilt" is believed to be bacterial in character, but attempts at inoculation have thus far failed. The varieties so far exempt from "wilt" are Apple, Bartlett, America, Marietta, Excelsior, and Babcock, all except Babcock being hybrids.

Relative to the borer, the author states that contrary to previous belief 90 per cent. of the larvæ emerge from their channels in the base of the tree trunk in the vicinity of the station about the first of August instead of much earlier, as it was assumed they would do. The remedy suggested for this insect is to wrap the base of each tree about the last week in July for 18 in. from the ground in brown paper or newspaper, tying it with twine and wire. After this the base of each trunk should be mounded up 10 in. high around the paper covering. About the last week in October the paper is removed and the worms dug out.

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Manures & Manuring

William Angus, B.Sc.

Lime.

Lime in its various forms is one of the oldest manures, having been used for agricultural purposes from time immemorial. The importance attached to the liming of land may be best gauged by the attention given to this subject by the old agricultural chemists and to the prominence it occupies in the older agricultural literature. In more modern days, even in the older countries, on account of the increase of artificials, especially basic slag, liming has generally gone out of practice. Of late years, however, farmers in the old country have recognised the mistake they were making, and are now going back to the custom of their forefathers in making greater use of lime as a manure, although they are adopting a different method of applying it to that in vogue, say, fifty years ago.

It must be borne in mind that lime is an essential plant food, and soils that are lacking in it cannot produce good crops Nevertheless, it is only under certain circumstances that it is necessary to add it to the soil for this purpose, as most soils contain it in sufficient quantity to support plant growth. One class of land, however, very often found wanting in lime, is that under grass. In such, lime tends to sink down in the soil, often forming what is known as a pan in the subsoil. The want of this constituent in pasture land explains the splendid effect that a top-dressing containing lime has on land lying under grass for any length of time. It is generally considered that when soils contain less than from .5 to 1 per cent. of lime they are deficient in it. Moreover, soils which contain a large amount of organic matter require a larger percentage than the above mentioned.

But although considerable benefit may be derived from the application of lime as applying the necessary food for plant growth, still the greatest advantage is to be got from its indirect action in the soil, both chemical and mechanical. And in order to thoroughly understand this indirect action of lime it will be necessary for us to consider its forms and their relation to one another.

Limestone.—Lime occurs in nature generally as carbonate of lime, in what is known as limestone and chalk, and we find large areas in most countries where the rocks are composed of such. In the old country we have the Downs in the South of England and the Wolds of Yorkshire composed of different forms of limestone, and in South Australia our limestone soils are well known. Other forms of carbonate of lime are marble and marl, and it has been estimated that about one-sixth of the earth's crust consists of this material in one form or another. It may be well to explain that the chemist speaks of limestone as "calcium carbonate."

Forms in Which to Apply Lime.—The most common form in which this material is purchased by farmers is that known as burned lime or caustic lime. To produce a good lime for agricultural purposes, the chalk or limestone used in the kiln should contain a pure limestone of carbonate of lime, say, 90 per cent; from one ton of pure limestone 11½ cwt of burnt lime are produced, and 8 cwt of carbonic acid gas passes off into the air. Although in olden days it was a popular custom to slake lime, converting it into the hydrate form, it is not now considered good practice in applying lime to the soil to do so. The lumps, after burning, are crushed to a fine powder in a mill, and sown by a drill just in the same way we sow superphosphate or Thomas phosphate. This, when it can be done, is undoubtedly the best way in which to apply the lime. It allows of the slaking process to take place very gradually in the soil, and avoids the risk of the slaked lime going into the mild form, which it does during slaking on exposure to the air.

It is not always possible, however, to get the ground lime, and when it has to be slaked or reduced on the land, the best way to do so is to put it down in small heaps from the dray, add a little water from a water-cart, and then cover up with soil. In a short time the lime slakes and reduces to a fine powder, which can then be fairly evenly distributed on the land by means of a spade or shovel. Care should be taken whan slaking not to add too much water, as when this happens the lime gets into a pasty condition. One ton of good lime will absorb, to reduce it to the fine, powdery condition, about 6 cwt of water. In America the shells are generally slaked in a heap, and then distributed on the soil by means of an ordinary drill, but this is rather an unenviable task with hot lime, especially on a windy day.

But although this is the most common form in which to apply lime, still the ground form is in every way preferable. In such a condition much smaller quantities can be very easily distributed on the soil, and it further allows of the slaking going on gradually in the soil, and this process has a very beneficial effect on its mechanical condition, especially if the soil is a heavy one.

Quantity of Lime to Apply.—Liming in the older *regime* of agriculture was undertaken only at long intervals. Farmers hold their land in the old country in terms or leases of nineteen years' duration, and it was considered best to apply one heavy dressing to the land once during this lease. As much as three tons to the acre were applied. This practice has gone quite out of use. Lying for nineteen years in the soil, a large proportion was soon converted into the mild or carbonate form, and again by means of natural drainage the formation of a pan was, under this system, almost a certainty. As the result of many experiments, it has been found much more profitable to apply small quantities of lime at frequent intervals, and, where the five-course rotation of crops is in vogue, it is considered best practice to put on from 3 to 8 cwts every five years, according to the condition of the soil. But as a first dressing on newly broken land, rich in organic matter and plant food, much larger quantities may be applied, Putting it on in this way it becomes part of the systematic manuring of the farm and can be easily distributed by an ordinary manure drill. It may be mentioned that when sown with a drill a piece of sacking should be put on behind the drill and on the sides, to prevent the lime blowing about. This sacking should come quite down to the ground behind, thus preventing much of the discomfort otherwise caused by the blowing about of the fine lime.

When to Apply Lime.—In countries where root crops are grown the farmer has a choice in the application of his lime. Usually it is put on with the root crop, after the land has been cleaned, just previous to ridging or even on the top of the ridges, although the latter method is not a commendable one. Following roots comes either barley or oats, on what is called "clean land," and this is a splendid time in a rotation at which to lime. When the land is ploughed ready for sowing in the early spring the lime is applied and the land afterwards cultivated so as to mix well with the soil previous to sowing the grain If put on in the unslaked form the farmer finds it necessary, of course, to sow his lime and mix it well with the soil some time before seeding, so that the slaking process may be fairly well advanced before the seed is put in. Undoubtedly a dressing applied in this way has a marked effect on the cereal yields. especially with oats.

Under South Australian conditions the best time to apply lime is just previous to working the cultivator on the land after ploughing. In this way the lime gets well mixed with the soil by means of the after working between then and seeding time, and with lime, as with every other manure, even distribution is a very important matter.

Action of Lime.—I have indicated already several ways in which lime acts beneficially in the soil, and would here just summarise as follows:—

1. It acts directly as a plant food, and consequently soils deficient in lime cannot yield full results.

2. It acts indirectly in lessening the adhesive effect of a stiff clay soil. This rendering of a soil more friable when dry is one of the most marked properties of lime. Farmers are familiar with the tendency to puddle which clay soils have when rain falls or when they are worked wet, and, what is worse, their setting hard as bricks afterwards. A good dressing of lime has a marvellous effect in checking this.

3. On sandy soils, however, its action is quite the reverse. There it tends to bind or consolidate the soil. Thus its action on light, friable soils is to increase their cohesive powers.

4. Lime, too, liberates or unlocks the dormant plant food in the soil, setting it free in forms available to the plant. One of the important ingredients of soils acted on in this way is potash. The different minerals in the soil which contain potash are acted on chemically by the lime, and the potash is set free from its dormant form and made available by the plant. The form in which lime acts most powerfully in this respect is as unslaked or caustic lime.

5. The action of lime on peaty soils, or those rich in organic matter, is of a twofold nature First of all, it helps very actively in the decomposition of the vegetable matter, thus rendering the nitrogen it contains available.

Such soils, too, often contain acids which are injurious to plant growth, and by applying lime they are converted into forms harmless to the plant. Hence, in all peaty soils, it will be at once recognised how important it is to give a good dressing of lime.

6. But other classes of soil are found in the over-acid condition, and here, just as with peaty soils, it acts as a corrective, neutralising the acidity, and making the land fit for plant growth. All lands reclaimed from water, or on which water has lain for a considerable time, should be limed, and the sweetening effect of the dressing will quite justify the labor and expense

7. One of the most important processes going on in the soil is what is now known as nitrification. During the greater part of the year this process is going on under our climatic conditions very actively. This is especially so when working for fallow. The presence of carbonate of lime in the soil is a necessary condition for this important process of nitrification.

In applying lime, attention must be paid, just as with other manures, to its purity. The quantity to apply per acre will depend on the nature of the soil and the purity of the lime. To many the process may appear an expensive one, but I am quite convinced that many soils I have already examined are deficient in lime, while others would be much improved in their physical condition by its use. As to whether it is expensive or not will depend entirely on the yield got from its use and this suggests that each farmer must find out for himself by experiment whether or not it will pay him to apply this important manure.

Kitchen Garden.

The preparation of ground for all main crops should be carried out as expeditiously as possible. This is an important operation on the plains, and success depends chiefly on the thorough manner in which the soil is worked. All kitchen garden ground should be trenched to a depth of 18 in. every fourth year, with a good deep ordinary digging in intermediate seasons. In manuring, a heavy dressing—and too much can hardly be applied—should be worked in at the time of trenching, which will last, as far as the subsoil is concerned, until the four years' rotation expires. The manure applied in the intermediate seasons depends upon the kind of crop to be grown. For instance, after trenching and heavy manuring any fibrous-rooted vegetables mry be planted, but not root crops. The former include cauliflower and all others of the brassiers family, lettuce, spinach, onions, leeks, etc. The latter branch includes beet, parsnips, carrots, radishes, salsify, and scorsonera. Although the soil may not be too rich for these roots, its condition, being newly charged with vegetable manures, is not suitable to the growth of clean straight roots without fangs, tbe absence of which is their chief recommendation. Fibrous-rooting plants, on the contrary, delight in searching the soil in all directions. and filling it whenever the manure is within reach with hirsute roots.

To Extract a Splinter.—When a splinter has been driven into the hand, it can be extracted by steam. Fill a wide-mouthed bottle nearly full of hot water, place the injured part over the mouth and press it slightly. The action thus produced will draw the flesh down, and in a minute or two the steam will extract the splinter as well as the inflammation.

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STOCK.

Diseases of Farm Animals.

No. II.

Breed and Type.

Certain types of horses are markedly susceptible to particular forms of disease. Weed or "shot of grease" (Lymphangitis), chronic greasy heels and canker of the feet are seldom seen in other than coarse skinned and heavy-legged draught horses. Amongst light horses, cracked heels are usually only met with in coarse bred and fleshy-heeled specimens, and but seldom in clean-boned fine-skinned horses claiming thorough-bred descent. Navicular disease is rare amongst cart horses, though it is a common enough affection of light-bred animals. Amongst other animals the proneness to milk fever of deep milking types and breeds of cattle may be adduced in this connection; and in Australia it has been observed that the disease of the lymphatic glanns of sheep called multiple abscess, or lymphadenitis, is largely confined to "come-backs." In sheep, it is the lightly-bred merino and other fine-wooled types that more quickly qualify for the "foot rotting" paddock, while the liability of line-bred shorthorns and other pedigree cattle to contract all and sundry constitutional affections is notorious.

Conformation.

Many instances of conformation predisposing to disease could be mentioned, but a few will suffice. Ponies are seldom roarers; it is the long-necked and fine-throated horses that usually develop this disease. On the other hand, ponies and round-barrelled horses of all sorts appear to be prone to broken wind; while those of the opposite build—"herring-gutted" horses are well known to be bad doers and liable to attacks of diarrhœa and other forms of indigestion. The association of sickle-hocks with curb, or calf knees with brushing and speedy-cutting, of sloping pasterns with break-down, of upright pasterns with ringbone, fetlock soreness (arbritis) and knuckling over, and of narrow upright muley feet with navicular disease, are more than mere coincidence: they are oftentimes cause and effect.

Color.

While the truth of the old saying that "a good horse cannot be a bad color," may be admitted, there is ample justification for the statement that horses of good color have more robust constitutions and are less liable to disease than "off colored" ones. By "good" color is meant that, no matter what shade it should be distinctive and pronounced. Brown, with tan muzzle, bay with black points, dapple and flea-bitten grey, and dark or liver chestnut, are favorite colors. and are characteristic of many great families, amongst which the grey "Snowdens," ths brown "Smugglers," and the ticked-chestnut "Sir Hercules" descendants are still famous in the land, not so much for their color as for their hardy family characteristics which accompany it. Mealy bays or browns with rusty manes and fawn legs: washy chestnuts with yellow mane, tail and leg feathering; and light mushy roans, are types of bad colored horses frequently met with, and almost as often found to be soft and skittery, full of funk, and without "bottom."

The absence of pigment in the skin would appear to have some influence in determining disease. Hoofs and horns are appendages of the skin, and when white (i.e., unpigmented) they are found to be more brittle, weaker, and more liable to disease than when colored with pigment. Certain skin eruptions are more pronounced on white cattle and white dogs, and on white patches of piebald horses; and cracked heels and grease are much more prevalent in white stockinged horses than in those with black points. In the latter case the influence of color in causing the trouble is undoubtedly subordinate to the irritation produced by the frequent washing and careless drying to which the legs of such horses are subjected; and on the whole the author's experience has not been such as to confirm the view that color has much to do with the causation of, or liability to, disease in a general way.

The two most striking examples of the association of color and disease are the melanotic tumors occuring under the tail in the region of the anus in grey horses and brown cattle, and the disease of the womb of white virgin heifers, called "white heifer disease," commonly met with in the hilly parts of Cumberland and the Lake district (England). These diseases are never found in animals of any other color.

Attention is drawn by De Varigny, in his work on "Experimental Evolution." to the view that in albinos "absence of pigment and sterility are co-related expressions of the same constitutional change," and he also observes that "the cause which induces albinism generally affects the reproductive functions in a marked manner," partial or total sterility being induced.

Metschnikoff's investigations in regard to the function of white blood corpuscles in disease have led him to conclude that depigmentation of men's hair during advancing years is due to the destruction or eating up of the pigment by the white blood cells. If this be true, and if it be argued from it that all absence of pigment is due to invasion and attack of these living cells, it would appear that color, or more correctly in this connexion, absence of color or pigment, instead of being a predisposing cause of disease, as is generally held, is rather an effect of disease. This view is supported also by the whitening of the hair, which grows on surfaces previously the seat of saddle-galls and other sores on dark-colored horses.

Temperament.

Except that nervous and skittish horses are more liable to accidents, and frequently exhibit a loss of appetite, purging, or other slight derangement after a fright, or abuse, or other excitement, it may be doubted whether temperament has as much influence on the causation of disease as is usually supposed. The idea that activity of the general or systemic circulation, which is said to be associated with high breeding and the sanguine temperament, predisposes to inflammatory diseases and congestions is not supported by experience in practice. In point of fact, congestions are more frequent in horses of languid disposition and circulation, and inflammation will more often supervene on the attack of a common cause in a fat, ill-conditioned horse with sluggish circulation than in a trained muscular horse, with heart and circulatory organs up to concert pitch. On the other hand, the tendency to dropsical swelling and puffiness of the extremities in coarse-bred horses, and which is put down to lymphatic temperament and sluggish circulation, is more reasonably accounted for by the anatomical features of the tissues concerned. The cow and sheep are considered to have a dull, lymphatic temperament, yet except during the occurrence of actual disease, these animals are singularly free from "filling" and puffiness of the legs, even when kept stall-tied for a lengthy time.

Pain may be felt more acutely by a horse of a highly nervous temperament than by a cross-bred 'slug"; but it by no means follows that the suffering of pain is made more pronouncedly manifest. In point of fact, the reverse is more often the case, and to operators of extended experience, the first violent plunge of the thoroughbred at the first cut of the scalpel, followed by the grim setting of the teeth and the dogged bearing of pain without further fuss, are evidences of "pluck" on which could almost be based an estimation of the animal's capacity for "seeing it out" at the end of a sternly contested race. This capacity to bear pain without murmur is a feature in the high-bred one in marked contrast to the squealing and groaning, wriggling, and sweating and general cowardly behavior which is kept up continuously by the underbred one while under the knife.

Sex.

It is obvious that the anatomical variation of the sexes will account for the occurrence of disease in one sex which cannot occur in the other; but apart from this it has been observed that in some few diseases to which both sexes are subject, notably roaring in horses and bladder affections, that the proportion of affected males is measurably greater than females.

The increased functional activity of the generative organs of females during pregnancy and the lactation period induces tendency to disease, and the alteration of the nutritive equilibrium which occurs at such times is sometimes responsible for grave derangement of the system. Mares "in season" are frequently subject to attacks of hysteria, and are not seldom the victims of accident.

Horse-breeding.

MR. NOSWORTHY.

Few subjects were of greater importance to the farmer, who should rear at least one or two foals each year, and these of the best type possible. They had a splendid market in India for their horses, and it behoved them all to consider whether they could afford to lose it by rearing inferior animals. He was thoroughly convinced that a great injury was being done to the industry by the many mongrel stallions travelling in the farming districts. In his opinion, farmers were largely to blame for this, as, if they did not patronise them, they would soon disappear. He was in favor of the proposed tax on travelling stallions; a fee of £10 per annum would result in nothing but fair to good horses travelling. As there was no class of work the horse is called upon to perform that does not require some special qualifications, the farmer should decide first of all the class of animal that he intends to raise, and decide accordingly on the horse he will patronise. If for any particular market, he must know the requirements of that market. There was one point that could not be insisted upon too strongly, and that was, that the best stallion is the cheapest in the end. His fee may be perhaps £1 more; but his progeny, if well looked after, will fetch £20 to £25; while the progeny of some horses will be hard to dispose of at £8 to £10, yet the actual cost of rearing the foal is the same. Sufficient judgment was not exercised in the selection of horses for farm work. For the waggon and road work they required a nice shapely draught of fair size, and he advised mating good farm mares to a Clydesdale horse. Too often the farmer made the mistake of breeding from his old mares, or from a mare of little use, because she is too slow or crippled. The natural consequence was that the progeny were similarly at fault. It was often objected by the farmer that he could not spare his best mares for breeding, but this, in his opinion, was a great mistake. For general farm work he thought a Suffolk Punch horse, like those shown at the Show, mated with their best farm mares, would produce a hardy, active class, which would do more light work on less feed than the heavier animals. Good temper should be sought in both stallion and dam. Often complaints were made of the few foals left by travelling stallions, but this was often the fault of the farmer, who worked his mares until they were in poor condition. Few would question the statement that they did not breed such good horses now as 30 years ago, and they had only to look at the class of stallions and brood mares on some farms to see why there were so many weeds about. If wool-growers were to breed sheep on similar lives, they would soon get very little wool from their flocks.

In regard to handling horses, it was a great mistake to break them in too young. He had seen horses in harness on the farm at two years old; these never got a chance to mature properly. It would be far better to leave them until three years. Always see that the collar fits the horse, and never give him more than he can pull. Never let a young horse think you are afraid of him. Ride or drive with a firm rein, and always break a young horse to harness alongside free movers. They must not be too fast, but something to teach the colt good paces. It pays to feed and groom the horse well. For light work, good chaff and long hay are sufficient, but for heavy or fast work add bran and oats. A team of three horses, well looked after, will do more than six of the same type badly fed. It was not very much trouble to keep a horse in fair condition; but let him get low, and it is surprising the amount of feed he will eat before he is a credit to his owner. Horses like a change of diet as well as their masters, and, when possible, the feed should be varied occasionally. They must never forget, in dealing with the foal, that he must, on no account, be allowed to go on short commons, as, if stunted when young, he will seldom get over it. In weaning great care must be exercised, and it is best to teach the foals when quite young to eat bran and chaff. This will assist their growth, and, when taken from the mother their development will not be checked.

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The Seedsman's Decalogue.

The "Journal of the Council of Agriculture," Tasmania, publishes the following quaint "Ten Commandments" for seed collectors, composed by a German agricultural professor and published in the "Deutsche Landwirthschafts Zeitung":—

1st Commandment—Reflect thereon that the parent plant and seed bequeath equally their good points and bad points, their virtues and faults, to their offspring, and that it is incumbent on thee, not only for thine own profit, but also for the advancement of Nature, to do thy share towards the improvement of plants. Therefore shalt thou do thy best in this matter, for "the seed is the beginning of life."

2nd—Thou shalt gather the seed from such plants as outwardly bear the stamp of being true to their species, for the characteristics are evident to the eye. As a man's breeding can be judged from his features, so can the character of a plant be seen.

3rd—It is the plants coming early to proper maturity which yield seeds that in their turn produce early crops. Therefore thou shalt not collect seed from plants which have run to seed before due time or in any other way are not satisfactory, for the faults, no less than the good qualities, are passed on to the third and fourth generation.

4th—See also that thou takest the seed from plants distinguished for fruitfulness and for growing crops of the best quality.

5th—Thou shalt not gather seed from plants that show evident signs of weakness or which suffer from any disease or insect pests; for the seed may carry the diseases and the pests to the next generation.

6th—Thou shalt not take seed from a plant grown on a soil which has not been cultivated with a rotation of crops; for an exhausted soil cannot produce a plant bearing seed of good germinating power.

7th—Neither shalt thou take seeds from plants grown upon soil which has been too heavily manured; for luxuriance is always the begetter of vice. Therefore give thou preference to plants grown under natural conditions, for such produce the best offspring.

8th—Thou shalt not gather seed from those plants which ripen latest; the first fruit yield the best seed. No proceeding is more foolish than that of using the first fruit and collecting seed from plants which ripen last and may be bitten by early frost. Moreover, such late seed possesses less vitality. An old cow gives birth to a weak calf, and an old plant poor seed.

9th—Thou shalt not take seed from plants near to which plants of the same sort, but another variety, are grown, as this might give rise to a crossing of variety, and such bastards are usually worthless.

10th—Gather not seed from late-ripening crops on heavy cold soils, for then the seed does not ripen sufficiently before the beginning of winter, and the seed is feeble. On the other hand, thou shalt not collect the seed too soon, and not before it begins to fall out. The ripening of the seed shalt thou further advance by storing the seed in a sunny, dry, and airy place

Hold thou by these commandments, so shalt thou have pleasure in thy crops and profit in thy work.

CONTENT OF A SILO.—One ton of silage will occupy 50 cubic feet. Thus, all you have to do is to calculate the cubic content of your silo by multiplying length, breadth, and height into each other; then divide by 50. If your building is 18 feet long, 18 feet high, and 13 feet broad, it will hold about 85 tons. It will take about 6 acres of green maize to fill it, and will supply fodder for more than a dozen cows for several months.

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Some of our breeders should have been in 'Frisco last month—they want shaking up.

The breeding stock is half the battle; buy carefully and mate judiciously.

Remember the chickens have two opportunities. They will inherit certain tendencies; but, in other respects, they will be just what you make them.

Make up your mind to think more kindly of your fellows; to be more ready to overlook faults in others than in yourself. To be charitable and generous in all things, and this season will prove the happiest you ever spent.

Feeding and Fattening Chickens.

ALTHOUGH many persons both in town and country keep fowls, few pay much attention to the proper feeding of chickens, and fewer still take the trouble to fatten them scientifically for market. With regard to feeding the young chickens, let us see what Mr Robert J. Terry, poultry expert of the Agricultural and Stock Department of Tasmania, has to say about this important matter—

Chickens do not require any food for at least thirty hours after they are hatched. Strange as it may seem, sand or fine gravel should be the first thing consumed by the chick, which all through its life it should have free access to. The first food may consist of hard-boiled eggs, finely chopped, and bread crumbs, or bread that has been soaked in milk (skimmed or fresh) and then squeezed dry. Bread and water would not do to feed chickens on. Why milk is used is that it counteracts the yeast in the bread. Water does not do this, hence bowel trouble. After the second day of feeding, what is known as the dry method of feeding may be adopted, which is a combination of broken grain and seed. The combination which should be strictly adhered to is—

Cracked wheat. 25 parts
Hulled or cut oats, 15 parts
Millet seed (white), 12 parts
Small cracked maize, 10 parts
Small cracked peas, 6 parts
Broken rice, 2 parts
Rape seed, 1 part
Small grit, 10 parts

Rolled oats may be used in the place of hulled oats where they cannot be obtained.

Perhaps better results even can be secured where quick growth is required by feeding part dry system and part ground meals damped. The great advantages of the dry system are the saving of time, as sufficient food for the day may be thrown down in chaff or other suitable material for scratching for the day, and the avoidance of bowel troubles

Fattening.

The fattening of poultry in some countries is really looked upon as a profession in itself, and may be looked at from two points of view, namely, the producer's and consumer's.

The consumer's point of view, When you buy a lean chicken you buy a tremendous lot of offal and bone, and very little meat.

The producer's point of view, Does it pay the producer to fatten chickens?

The following must prove the advantages of fattening: Before starting an experiment on a rather large scale, three average chickens were killed, dressed and cooked. It was found that the meat of the three chickens weighed 2 lb 6 oz, and the bones 1 lb 2 oz. The remainder of the chickens were then put into crates and fatted, and at the end of that period three of the average chickens were killed, dressed and cooked; the meat from these three fatted chickens weighed 6 lb 6 oz, and the bones 1 lb 11 oz. This experiment showed with the fatted chickens a gain in choice, edible meat of 5 lb, and a gain in weight of bone only 3 oz for each chicken. Moreover this does not take into consideration the improved quality of the flesh of the fatted chickens. This experiment was extended far longer than was necessary.

Another experiment was with 73 chickens They were a good average lot, chiefly ordinary farmyard stock that had been graded up by pure bred roosters; they were divided into four lots. It was endeavored to have each chicken weigh as nearly 3½ lb as possible at the commencement of experiment. One lot was treated as ordinary farm chickens, being allowed to run out and get all the exercise they wished to take; another lot was in a shed, the birds having no outdoor exercise; the third lot in crates, which will be fully described later on; the fourth lot in similar crates, but during the last ten days of the experiment the chickens were fed by the cramming machine.

The chickens were all fed with similar food, the food being one part each maizemeal, oats and barley. During the last ten days a little fat was also fed.

The result of the experiment was as follows—

	Lot 1: Crammed.	Lot 2: Crates.	Lot 3. Shed.	Lot 4: Loose.
Weight at beginning of experiment ...	70	75	64	60
Weight at close of experiment (three weeks)	106½	93¼	67½	75½
Gain	35½	18¼	3½	15½

The following experiment will show what many a farmer will gain by fattening. It will be seen that 131 chickens gained in weight 380½ lb in four weeks. The chickens were in a healthy but very lean condition when placed in the fattening crates, and were fed out of a trough throughout the fattening period. The cramming machine was not used.

Breed of chickens: Plymouth Rocks and Orpingtons.

Period—Weeks.	No. of Chicks.	Live Weight. Lb.	Gain in Weight. Lb.	Meal. Lb.	Skim Milk. Lb.
Commenced	131	491½		—	—
1st	131	654	162½	252	438½
2nd ...	131	677½	23½	227	435¼
3rd... ...	131	756¾	79¼	286	464
4th	131	827	70¼	286	534

Average gain in weight per chicken, 2 lb 9 oz; cost of feed per lb of grain. 2¾d.

A cramming machine is not an absolute necessity for fattening poultry; first class chickens can be turned out without its aid, provided that the owner understands his work. It is impossible to fatten fowls when running at liberty (unless it is the game fowls, which fatten naturally), but a fortnight's confinement in a coop and liberal feeding of soft foods will do wonders The confinement is necessary because fowls at liberty will walk about, develop muscle, and harden the flesh; the fowl in confinement does nothing but stand still, eat and sleep. It is, of course, very unnatural, and its health and appetite suffer after a time, but before this stage arrives the bird is killed. All fowls are allowed to feed themselves first in the fattening coops; when the machine is used, it is for finishing them off.

The fattening coops should be made as follows:—6 feet long, 16 inches wide, and 20 inches high, inside measurements. Each crate is divided by two equal partitions into three compartments, each of which holds four or five chickens, according to size. The frame pieces of the coops are 2 inches wide and ¾ of an inch thick. This frame is covered with battens, which are placed lengthways on three sides (bottom, back, and top), and up-and-down in front.

The battens for the bottom are ⅞ of an inch wide and ⅝ of an inch thick. I, personally, have found that ½-inch wire mesh stretched across the bottom is better than this. The back, top, and front battens are the same width, but only ⅝ of an inch thick; the spaces between the battens in front are 2 inches wide, to enable the chickens to feed from the trough. The top battens are 2 inches apart, and the back ones 1½ inches The top battens are cut above each partition, and six strips 2 inches wide are nailed under them; the three doors so formed are hinged to the rear corner piece. The coops are placed on stands 15 inches from the ground. The droppings from the chickens are received upon sand or other absorbent material. A light V-shaped trough 2½ inches wide inside is placed in front of each crate, and carried on two brackets nailed at each end of the coop. The bottom of the trough is 4 inches above the floor, and the upper inside edge is 3 inches from the crate. They may be placed under cover or outside, according to the season of the year.

The birds should remain in the fattening crate for a period not exceeding twenty-one days. Some chicks will fatten more readily than others. These should be picked out a week before finished, and during this last week it is well to add 2 oz of mutton fat each meal per bird to the backward ones. Before the chicks are placed in the crates they should be well dusted with sulphur, to kill any lice. Do not give any food for the first twenty-four hours after placing birds in the coops. It is necessary to feed the birds lightly during the first few days. They should be fed three times a day, but do not give them quite as much as they can consume; fresh water twice daily, and grit two or three times a week. After the birds have been in the crates five or six days they should be given, twice a day, as much food as they will eat. Twenty minutes after feeding, the troughs should be removed. The chicks should be starved thirty hours before killing. This will prevent the food remaining in the crop and intestines. Several hours after the last feed allow the chickens what water they wish to drink, then take it away, and give them no more. A satisfactory fattening ration is one that is palatable, and will, at the same time, produce a white-colored flesh. One of the best of these would be oat dust, which is the fine flour or dust obtained from making oatmeal or rolled oats, and is now, in most cases, mixed with pollard. This substance, mixed with skim milk to the consistency of porridge, and fed to the birds with the addition during the last ten days of 1 oz of melted mutton fat to each bird, is one of the most satisfactory rations that could be given. Other rations would be 2 parts second-grade flour, 2 parts ground barley. 1 part pollard; equal parts ground oats, ground barley, ground wheat; 2 parts ground oats, 1 part ground barley, 1 part ground wheat, 1 part ground maize. All of these should have the addition of mutton fat during the last ten days.

The following table shows the difference in the weights of representative chickens killed before being fattened and similar chickens killed after being fattened for thirty-six days:—

WEIGHT OF THREE CHICKENS.

	Before Fattening. Lb.	oz.	After Fattening. Lb.	oz.
With feather off	8	8	16	4
Ready for cooking ...	5	2	11	6
After being cooked and left cool for two days	3	8	9	2
Bones	1	2	1	1
Edible portion	2	6	7	6

This shows that there were three times more edible portion from the fattened chickens than from the others, and every ounce of it was of better quality.

The value of charcoal must not be underestimated. It is of much help in keeping fowls in health, and preventing looseness of the bowels. Feed it, powdered, in the food two or three times a week.

It has been found that chickens for market will fatten faster if fed on charcoal. Charcoal is not a medicine, strictly speaking. It is an absorbent, and as such takes up the poisonous gases in the system and carries them off. It is practically harmless in any amount.

The above article, taken from Bulletin No. 7 of the Department of Agriculture of Tasmania, contains such precise directions for fattening poultry for export that we shall not be surprised to hear that many who have up to the present taken little trouble about it will now make the experiment. The Queensland Department of Agriculture and Stock has fairly shown the way in the London market; its poultry expert is prepared to do everything necessary to assist shippers with advice, so that the birds may arrive in good saleable condition and at the season when the best prices are obtainable. The matter thus lies in the hands of the poultry-breeders themselves.

Get a Move On!

Now that winter is not far off, poultry farmers and fanciers would do well to "get a move on" and get things to rights. Whitewash the houses and take good care to fill up all the cracks, etc. Most poultry farmers will be aware that eggs are the things that pay most in winter, therefore don't sleep. Get to work and do your utmost, and prepare to get as many of these small but precious articles called Winter Eggs as possible. Remember eggs in winter are worth 2d. each—twice the value of summer eggs; so you have no reason to growl if you have to do a little extra work, and, besides it will keep you warm, so it is worth going for. If you want plenty of eggs in winter give the birds plenty of exercise. Keep them scratching, and that will keep them warm, and warmth in winter goes a long way if your aim is eggs. Keep the houses snug, still don't forget ventilation. Mind, fresh, clean water and plenty of grit. Throw some ground wheat, maize, or oats amongst the straw in the scratching shed the night before, and they will come out in the morning and get to work straight away, and by the time the warm mash is ready they will have warmed themselves up well, through scratching for ground wheat, etc.—then the mash they get does not go to keep up warmth, but to help the egg-production. Another thing that will help egg-production in winter is to keep the house absolutely clean, and also have the floors high and dry, and by all means do not let any dampness collect on the floors or anywhere inside the house. J.T., in "Australian Hen."

All about Eggs.

Grade them.
Gather often.
Pack carefully.
Market quickly.
Shade the nests.
Feed for flavour.
Gather regularly.
Have clean nests.
Provide clean water.
Cockerels for fertility.
Brand your cases plainly.
Rank food taints the eggs.
Set eggs for table fowls now.
Don't change agents too often.
Market pullets' eggs separately.
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To Select from.

What is a Fat Bullock?

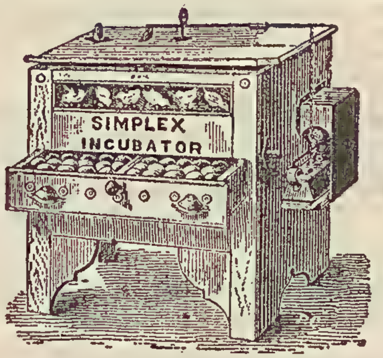
"What is a fat ox?" asks a writer in the 'Farmer and Stockbreeder." We prefer our colonial term, "bullock." "Ah!" he says "that is precisely what many muffs in the farming world have need to learn, and others, too, for that matter, who may be fairly well up in their occupation otherwise. Many a man knows better how to fatten his animal than to tell when it is fat. And whether or no the ox or heifer be fit to go may make, and very likely will, 1d. per lb difference in price realised, and these pence represent profits very often. There are nice tight little heifers and steers that make their way pretty well good as they go, and here esteemed points are likely to be found when looked for. But, on the other hand, there are big boned, three cornered, inapt fatteners that require a lot of ripening up, and need careful examining to ascertain when they are really fit to go. The ripe beast has a well-developed chine, well covered ribs, fully-developed loin, wide hips well flesh-capped, good rumps, projecting twist, a double handful of flank, large scrotum, deep wide brisket pushing well forward. Though the under beef is not the part to fetch the money on the butcher's slab—and he knows it—it indicates weight in the carcass that no other point does. Finally, there is a certain touch which tells the initiated when the carcass is ripe—even a firm but pleasant touch which yields but little to pressure—whilst uniform fleshiness all over the carcass is essential, or at least desirable. But, dear me! the handling of a fat bullock is becoming almost a lost art in these days of auction marts, and it is vain for the feeder to hope to know when his beast is fit to go if he knows not the meaning of information given in the examination of almost every point."

THE VALUE OF THE GOAT.

Writing on the subject of the common (not the Angora) goat, a correspondent at Nikenbah, Maryborough (Qd.), says:—"I am aware that the common goat does not, as a rule, command the sympathy of the general public, but let me show how these animals can be of great use to the settlers on new scrub lands. I felled two pieces of scrub, each of about 20 acres, nearly at the same time. The timber on each block was burnt off about six months ago. On one of the cleared portions my goats were allowed to roam at will, with the result that to-day there is scarcely a sucker of new growth or a weed to be seen. On the second block, which was protected from the goats, the new timber growth is 3 to 4 feet high, and would cost at least 15s an acre to bring it to the condition of the other piece on which the goats browsed."

THE NEXT DROUGHT.

Mr Clement Wragge, the Government Meteorologist in Queensland, in writing to the London "Standard" recently, foretells another drought, and ends his letter as follows:—"Now is the time for Australians to wake up and lock the rivers for water conservation and irrigation. Better so than trying to keep out the Japanese. For another Australian drought will attach to the next solar minimum after 1910 as surely as little apples fall in autumn. Laughter and ridicule will not alter fact, and Galileo's spirit will bear full witness."



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440 acres, eleven miles east Mount Pleasant, sure rainfall, 165 acres fallow, good farm; £3 acre. £450 down.

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Smithfield, 300 acres, fine property, £7 12s 6d

Gawler River (near), 320 acres, well improved, fine Land, Artesian Bore; £3 acre, terms.

Narracoorte, 830 acres, House, Creek, Nettes, Fence, splendid Land; £3 acre, with 990 acres C. Lease.

Bull's Creek, 960 acres (200 acres freehold), £8 0.

434 acres, Clinton, Y.P., 23 bushel average. House, Fenced, Water, etc.; only 80s, terms arranged.

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The June Number of . . .

The Australian Gardener

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THE FLOWER GARDEN.

Floriculture.

Planting.

Shrubs, trees, and all hardy border perennials should be planted by the end of this month, and in all cases water should be given to make sure that the soil is well settled amongst the roots. The soil should first be pressed round the plant with the foot, as firmness is a most essential point in planting.

Drives and Walks.

The forming or regravelling of drives and walks should be done now, so that they may be well raked whilst in a wet state.

Pruning.

Pruning generally should be carried out during the month. Many shrubs and even trees are allowed to become overgrown, which gives them a thin, meagre appearance. By keeping them judiciously cut back a more dense, even surface is secured, which gives them a much nicer appearance. Ornamental trees are often spoiled through neglect when young. Care should be taken to encourage one central shoot only, so that the developed tree shall have a single stem; sometimes two or more stems are allowed to grow and the mischief is unnoticed until past remedy.

Shrubs.

Finish layering choice shrubs, including cannias, ceonothus, laurels, myrtle, veronicas, escallonias, coprosmas, and laurustinus that are easily propagated by this method. With these plants no preparation of the branches is necessary. They are simply laid in the ground 8 in deep at the lowest part, leaving from 6 to 8 in of the tips of the branches out of the ground; tread the soil firmly above the parts buried.

Edgings.

Cuttings of edging plants as bax, rosemary, lavender, and fairy rose may now be put in. When planting curves the eye must be the guide but in straight places a line should be used for planting. Ground is first prepared by digging to a fair depth a strip some 12 inches or more wide, treading firmly. and then stretch the line. A small trench is then dug out on the border side, which hould be made 5 in. deep. In this the cuttings are set sloping slightly towards the line, with about 2 in of the tip of each cutting standing above the ground level. The loose soil is then raked into the trench and trodden firmly against the cuttings, a good watering given, and the work finished off by raking in a little loose soil. The cuttings should be set not more than 4 in. apart. Edgings that are established should be trimmed, Where long straight lines are to be cut, the best way is to first run the shears along the top, reducing the edging to a proper height and then to stretch a garden line along the top, clipping the sides to an equal distance from the line.

Lawns.

Lawns of couch and buffalo grass may be laid down; where the soil is poor it should be well manured to ensure a healthy rapid growth. The ground should be dug deeply and made firm, the surface raked perfectly level, and the roots dibbled in about 4 in apart each way.

Seedlings.

If the seed boxes were placed in a warm house and on a bench with pipes underneath and the seeds were good, the seedlings will show in lusty grey or purplish rose above ground in from two to fifteen days, most varieties within a week from sowing, a few not before three or four weeks, all according to what they are. It is then time to expose the seed pans to all the light possible. There is nothing better for them than raised shelves, a foot or so from the glass. And now we have reached the most critical stage in the life of seedlings. While there are a few species that will grow very like weeds and are really hard to kill, most of the kinds, which are to grow into valuable stock are such as need constant watching and careful watering at this period. Any excess in either direction, too dry or too wet, may cause the loss of every seedling of some good variety, and the work will have to be done over again.

As it is with water, so it is with air. Fresh air is the chief essential in promoting and maintaining the health of young plant growth, but it must be admitted with caution. Cold currents through a warm house may not kill fully grown plants at once, but they are a sure death to the young seedlings as the well-directed strokes of a club. Changes of air in a house are first of all and most directly felt near the glass and trays placed on a high bench or on shelves.

Seedlings most readily yielding to a wholesale damping off, such as asters, stocks, torenias and calceolarias, should undergo a transplanting from one tray into another as soon as the first leaves offer a fair hold for thumb and finger. This pricking off is the surest safeguard so far discovered. Besides this it is a means of converting thin, spindly weaklings into strong sturdy plants, and where the seeds have been scattered too thickly and the seedlings are a dense mass, it becomes the only remedy. All others with plenty of elbow-room and not over tender or sensitive may remain in the seed boxes until they are of suitable size for small pots or for hot bed and frame. But of whatever kinds they may be, or at whatever time they are raised, they should always be kept on a steady, uninterrupted and energetic forward move.

Sowing Seeds.

Most of the seeds fingered by commercial florists are started in shallow wooden boxes or seed trays of a size convenient for handling and moving about. An inside depth of two or three inches answers the purpose very well. A soil suitable, with few exceptions, for all kinds of seeds should always be prepared ahead of time, being made up of a good brand of fresh, friable loam, somewhat sandy and but sparingly enriched with thoroughly decayed manure or the material from a spent hot bed.

Seed boxes must be provided with well-working drainage material, unsifted, coarsely broken up turfy soil. as a first layer is usually all that is needed for the purpose. On this the regular sifted soil is placed, evened and made ready for sowing.

Now the seeds are scattered over the surface, pressed into the soil firmly with a flat, smooth piece of board and then watered down with a rose watering can, going over it with care several times until the soil is wet through.

If the seeds are as large as nasturtium, canna or coboea seeds, each one should be pressed into the soil with the finger, while such seeds as those of stocks, pansies or asters, after being firmed down with the board and watered, should be covered with a layer of moist finely-sifted soil, well-decayed manure or hops, not thicker than the back of a knife. But such seeds as those of libelia, petunia or nicotiana, need no covering, none but the pane of glass, piece of board or paper, which is laid over the boxes until the seeds are up. Until then the seed trays so covered will, in most cases, need no further watering.

Roses in 1905.

The following notes, contributed by Alex. Dickson, of Hugh Dickson, Royal Nurseries, Belfast, Ireland, to the Horticultural Trade Journal, England, will be read with interest by Australian rosarians.

The greatest interest of the trade will be manifested in the newer roses shown during the year, and the outstanding variety was undoubtedly J. B. Clark, which won the silver medal at Regent's Park for the best H.T. in the show, a flower of immense size and finish; Joseph Hill, H.T., a splendid variety of Sunrise color but far superior to that variety; Betty, a lovely garden rose of unique coloring; Mrs Myles Kennedy, a creamy pink tea, of splendid form; and Countess of Gosford, delicate shell-pink H.T., a type of Killarney, distinct in color. Among the best of the older novelties, Gustave Grunerwald, Dean Hole, Mme Paul Oliver, Hugh Dickson, Mrs David McKee, Le Progres, Mme Vermorel. Lady Q. Ewart, Mme Chas. de Luze, and Prince de Bulgarie, were well shown.

We are rapidly advancing to a type of H.T. rose which is first and foremost as a garden or decorative rose in the truest sense of that term, and is at the same time a valuable show rose. We are developing in this class colors which were a few years age unheard of among H.T.'s, and it will be at once apparent to the trade that the public are not slow to appreciate the value of this improvement, as the demand for the newer roses of this type is still much in excess of the supply.

Such sorts as La Tosca, Le Progres, Joseph Hill, Mme. Chas. de Luze, Mme. Ravary, Abel Chatenay, Liberty, Dorothy, Richmond, Betty, Paul Lede, Jules Grolez, Perle von Godesberg, Gustave Grunerwald, Etoile de France, Geo. Laing Paul, Lady Quartus Ewart, Lady Ashtown, Anne Marie Soupert, Prince de Bulgarie, Senateur Belle, Paul de Longprey, etc, are sure to sell well for many years to come.

The type of climbing roses, which show an admixture of polyantha and Wichuaraina blood, have received some valuable additions in the last few years. Lady Gay, Wedding Bells. Debutante, Gruss an Zabern, Sweetheart, Philadelphia Rambler, Carissima, Stella, Minnehaha, and Hiawatha, are all good, and thoroughly distinct both in habit and flower.

The tea roses show less advance than any other section, but one or two of the novelties are really good, notably Mme. Vermorel, the best addition to this section since White Cochet; Freiherr von Marechal, Saxonia, and Friquet.

The novelties among H. P's. are not numerous, but some of them are of high merit. M. H. Walsh is a firm dark crimson: Mrs. A. M. Kirker, a clear cerise pink of very large size—both of these are fine autumnal roses, as is Hugh Dickson, crimson scarlet; and Hugh Watson, a red of "Hayward" growth.

In the garden rose section some very beautiful novelties are shown—

Sulphurea, Countesse du Cayla
Una, Rugossa Repens Alba
Phillippine Lambert, The Dandy
Katherine Zeimet and Irish Elegance.

Several old favorites were splendidly shown during the year, notably those in large bamboo stands at Regent's Park, where they made a delightful show. A. K. Williams was magnificent, as was Franz Karl Druschki, Killarney and White Maman Cochet, while in vases Ulrich Brunner, Mildred Grant and Caroline Testout were very fine.

Carnation Breeding.

BY PROF. H. F. HALL.

Some varieties never produce pollen, others only during Fall and Spring, while some are productive in this respect at all seasons.

By growing in pots and keeping the soil rather dry we have obtained pollen during the Winter months from varieties which refused to do so when grown in a commercial way.

Select for parents the most promising plants of the varieties to be used. If the flower selected for female or seed-bearing parent contains stamens they should be removed with forceps or tweezers as soon as the flower opens or before the anthers show the pollen, otherwise self-fertilisation may take place.

In most varieties the pollen matures before the stigma is ripe, thus eliminating much of the danger of self-fertilisation. When the pistil is receptive, which condition is indicated by the development of the stigmatic hairs, the pollen may be applied by the aid of a camel's hair brush or dusted or from the male flower.

I have obtained best results in using for this purpose a strip of ordinary blotting paper 3 or more inches long and about one-half inch in width, one end being cut with scissors to resemble a sharpened pencil, the point of which is slightly fluffed to enable it to take up and hold the grains of pollen until lightly rubbed over the stigmatic surface of the pistil.

By this method we have been successful in setting over 90 per cent. of all flowers worked and requiring very little pollen, none being wasted as in other ways This method is original with us, so for as I am aware.

From 10 a m. until 2 p.m. on bright sunny days and a fairly dry well ventilated house are ideal conditions for pollenating. If the operations are successful the petals will wilt in from one to three days, soon after which a part of the calyx should be torn down to allow the nectar to drain off, which if allowed to remain would develop a fungous growth and destroy the ovary.

The seed pod should remain on the plant about eight weeks or until the seeds are brown, when they may be gathered with their stems and put away in a dry place for a short time to ripen. A good time to plant is from January 15 to February 15.

Carnation breeding is yet in its infancy. The leading varieties of to-day will be little grown ten years hence. What the type of that time will be no one can tell.

The object of crossing is to combine the good qualities of both parents in the progenies. This combination is seldom obtained, but by knowing the pedigree of each of the parents used the breeder should be able to produce the type desired by growing a large number of seedlings from which to select.

After breeding out of a variety certain undesirable traits by selection, and using this variety as a parent in making a cross we often find the old hidden faults very much in evidence in the offspring. When the inherent forces of two plants unite in a cross a struggle for supremacy takes place, whereby the fixed or constant character is set free, to gather again in the progeny in various combinations of form, colour, etc.

As no two plants of progeny are exactly alike it is very important that a careful selection should be made and that a large number of plants be available from which to select the parents for crossing.

Some varieties have unknown or hidden qualities, for instance the color character of a flower is often compound when it appears to be simple.

In breeding we often look upon a plant as a unit when it really comprises a large number of traits or characters.

The longer we work in a random way the more puzzling becomes the question of inheritance and cross-breeding to one in search of definite results.

We should seek a better knowledge of the laws of plant breeding, as at present we are groping in the dark so for as a knowledge of past results is concerned.

I would suggest that all information obtainable on this point be published from year to year, from which conclusions could be drawn to be used as a foundation for future work.

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Night Blooming Jasmine.

Many gardeners are familiar with the old greenhouse plant Cestrum aurantiacum, which adorns greenhouse collections of such plants in the early days of spring with its racemes of yellow flowers.

In the same gems of plants are two other species famous for their sweet-scented flowers, the C. diurnum and C. nocturnum, known respectively as the day jasmine and the night-blooming jasmine.

The flowers of C. diurnum are white; those of C. nocturnum are creamy yellow. Looking on jasmine proper as sweet-scented, though all are not, the name jasmine is well applied to the two cestrums, for both are sweet-scented, the night-blooming one especially so. The fragrance is delightful and penetrating, perfuming the air for a long distance.

Another species, C. Parqui, is also famed for its sweet odor. These are all greenhouse plants and are easily kept in winter, and they are mentioned as these sweet-scented flowering-plants are often asked for by those interested in greenhouse plants.

The jssmine itself is so famed for sweetness in song and story that it must be the reason why so many plants with sweet-scented flowers are called jasmine.

There are the cestrums just referred to and the gardenia that come to mind, going under the name of Cape Jasmine; and I think there are other sweet flowers under the name. The gelsemium is called Carolina Jasmine, but lovely as are its yellow flowers in spring they are not sweet-scented.

The misuse of the common name of a plant is met with in many instances as well as those mentioned; for example, the calling of so many plants japonicas and the periwinkle myrtle, confusing the florist often when orders for such things come to him.

Japanese Persimmon.

Japanese persimmons are increased by grafting them on seedlings of their own kind, or of the native one, Diospyros virginiana. Were it not that there are many named kinds, the seedlings themselves would be sufficient. Another reason for looking to grafting is that persimmons are not all fertile, and a seedling may or may not bear fruit. It is a good way to pot a lot of stocks a year in advance. They are then well advanced when wanted for grafting. Another advantage in this is that it admits of having the grafting done indoors in Winter, when there is more leisure for the work than in Spring. But where it cannot be done in this way, it is good to do the work in Spring, on stocks growing outdoors. Be sure the cions are obtained from fruit-bearing varieties.

Japanese persimmons are hardy in protected places, such positions as city yards or like enclosures; and even in open places, when wood is well ripened, they have come through some cold Winters in good shape. The fruit is so very much better than that of the native sort that it is a great temptation to endeavour to produce it.

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The Orchard.

By James Burton.

It is a well-established fact that regular consumption of fresh, ripe fruit is conducive to health. It is true farmers cannot have so great a variety of meats as those who live in towns, but they may enjoy a succession of ripe fruit a good part of the year, if they will but choose to take the trouble to plant and cultivate a small orchard. The productiveness of small pieces of land appropriated to fruit culture is truly wonderful. Having selected the site, which, in my opinion, should be a sloping hillside, contiguous to a well-defined gully, or a slightly elevated piece of land, the ground should be well prepared by subsoiling to a depth of 12 in., or, better still, by trenching to a depth of 30 in.

In selection of trees, young ones are better for planting than old ones. Two years from the bud or graft is long enough for trees to remain in the nursery. The plants should be stocky and branched, and should be taken up carefully, so as to preserve the roots. Where the soil has been prepared by deep tillage it will not be necessary to dig holes deeper than required to merely cover the roots of the trees; but the planting should be done with great care. The roots should be spread out in their natural position, the finest soil put next to the fibres, and worked in among them with the fingers, so as to be in immediate contact, both below and above them. He would advise planting 20 or 22 ft. apart each way, but the distance between the trees will depend upon the habit of the variety, some requiring more space than others.

Close planting has many advocates, who advance some cogent reasons for crowding the trees, instead of the wide planting of former years. A few of these may be mentioned. In the first place it is now conceded that the land appropriated to the orchard should be given up to the trees and not used for other crops, therefore there is less necessity for space between them. In close planting, the whole ground is shaded from the baking influence of the sun, and thus remains more loose and friable than when exposed. The crowding of the trees also protects them in a great degree, and in exposed positions this close planting especially shelters them from the trying winds.

Varieties are so numerous and tastes so diverse that it is almost impossible to make out a list of sorts that will be acceptable to all. And, besides this, it is well known that the varieties that succeed in one locality may fail in another. Every planter should endeavour to ascertain what sorts have been tested and approved in his own neighborhood. For the family orchard it is best to have a succesfion in the time of ripening, and these should be productive and hardy.

Starting with cherries, this delicious fruit appears to be more fastidious as to the soil than any other, for, though it will grow almost anywhere, it does not stand well on rich limestone lands. The following are some of the best varieties:—Early Lyons, Biggareau Napoleon, Black Eagle, Waterloo, St. Marguerite. These trees are very apt to split and burst their bark, especially where the stems are exposed to the sun by trimming them up as standards, hence the importance of low heads.

A few fig trees and one or two mulberries should have a place in every garden.

In plums some of the best are:—Orleans, Green Gage, Golden Drop, Burbank, Kelsey's Japan, and Wickson.

Apricots, peaches, and nectarines are always acceptable, easily grown, and come into bearing at an early age Unfortunately, apricots are not constant bearers, as the flower buds are often injured through various causes. Allen's Early, Oullin's Early, Riverside, and Moorpark are the best varieties. Of peaches, some of the best varieties are Briggs' Red May, Wilder, Alexander's Early, Mountain Rose, Foster, Early Crawford, Elberta, Muir, Sea Eagle, Camden Golden, and Bonanza. In nectarines the following are good varieties to plant:—Irrewarra, Hunt's Tawny, and Gold Mine.

Quinces have been too much overlooked by farmers, who could not present their families with a more acceptable fruit. They are hardy, need very little space, and require very little attention.

No garden would be complete without vines, which should be planted 8 or 10 ft. apart. It was best to trellis them, as they do much better, and the fruit is easier to grow.

In citrus fruits too much care cannot be taken to obtain yearling trees of good constitution and of profitable varieties. Where the soil is deep, well drained, and fairly rich, the Washington Navel, Joppa, Jaffa, Blood Maltese, Mediterranean Sweet, Majorca, Parramatta, Sabina, and Valencia Late; and on the shallower and lighter soils Siletta and St. Michael seem to do better than the newer kinds.

In lemons, there is not a very wide choice—the Lisbon, Villa Franca, and Sicily—these three being the most commonly preferred. In most districts, the lemon tree, as commonly grown on lemon stocks, is neither a healthy tree nor a long-lived one. The use of orange stocks for lemons is to be strongly recommended. In some places orange stocks are used successfully for all classes of citrus fruits.

With apples and pears it is possible to have fruit in use all the year, and they always command a good price during winter or exported earlier in the year. In apples most of the best varieties to plant are:—Irish Peach, Beauty of Bath. Orange Pippin, Golden Pippin, Ribstone Pippin, Cleopatra, Dunn's Seedling, Esopus Spitzenburg, Rome Beauty, Five Crown, Northern Spy, Jonathan, Rokewood, Strawberry Pippin, Scarlet Nonpareil, and Newton Pippin. The latter is one of the highest priced apples exported to England.

In pears some good varieties to plant are:—Brockworth Park, Wilder, Duchesse D'Angouleme, Elizabeth Cole, Howell, Beurre Diel, Beurre Clairgeau, Josephine de Malines, Vicar of Winkfield, Williams' Bon Chretien, and Uvedale's St. Germein (an immense stewing pear).

There are other fruits, some of which are not suitable for the northern districts. All of the fruits mentioned were suitable for preserving and drying (except citrus fruits), and enough should be preserved and dried to keep the family supplied until the following season. The windfalls should be gathered every day, and if not suitable for drying, can be fed to pigs and poultry. He would advise planting trees to act as a breakwind to the orchard. Almonds would be very useful and profitable, and two or three rows would be sufficient, especially if Jordan almonds were planted on the outer row and Brandis the inner rows. The orchard needs constantly working to keep weeds down, and the soil loose and friable. In the spring, it is a good plan, where possible, to irrigate with flood waters, when the land will take enough moisture to carry the trees through the season if properly cultivated.—Journal of Agriculture of S A,

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Cultivation in Regard to Fertility.

By Professor Angus.

It had been said that "implements made the best manuring." They had had the idea at one time of the chemist and biologist dominating agriculture, but that had not been carried out, though the biology of the soil had a great deal to do with the growing of crops. Fertility, however, was the condition they wanted to bring their soil into to produce the best yield at the most profitable figure. Unfortunately, they often stopped there, making the fertility a matter of the immediate present; simply, in fact, in its relation to the crop just coming. They should bear clearly in mind the fact that the man who worked his soil for the immediate present was certainly not having an eye to the fertility of his land, and he would ultimately suffer. In the first place, land had a natural fertility, viz., its natural power of producing crops, and this might either decrease or increase, according to the system of treatment. That was really what the farmer paid for when he rented land; nay, even when he bought land. Everything got from the land beyond the natural results might be called increased fertility, the result of good farming and good treatment. This, too, rightly belonged to the farmer, as it was purely and simply the product of his own industry. But they often found that, even with farms adjoining, the results were much better in the one case than in the other. With soil much the same, and weather and climate similar, yet they frequently found astonishingly different results. What, then, was the cause of this difference? They generally found that the man who cultivated best and manured his land according to the requirements of his own various crops was the one who beat his neighbor as regards returns, and the one who from year to year was adding to the fertility of his land.

There were certain factors which tended to increase the fertility of their soils. Most of them, nay, all of them, might come under the term cultivation. Sometimes the latter term was misunderstood, and considered as merely meaning tillage. That was wrong. Cultivation was really the whole process of growing the crop, and the use of the plough, harrow, scarifier, and roller in the way of tillage was only portion of the whole process. In the first place, there was drainage, which had a beneficial effect on the land. To be fertile land must be free from a water-logged condition. This implied that where water had gone through the land air could follow, and this would help the soil by allowing the important function of oxidation and nitrification to go on. These were no mysteries now, and farmers had come to realise that unless the air got through the soil to bring about those actions the soil would not give the best results, and the dormant properties would not be put to use. In South Australia this part of cultivation, however, required very little attention outside of the South-East.

Secondly, there was liming. This might be considered a mistake by some present, but he might tell them that he had found few soils not wanting lime. For a soil to be fertile, viz., to grow good crops, it must be free from all injurious and sour acids. That freedom was brought about by the use of lime, which converted these properties into a condition not injurious to plant life. In another way pure lime had a very marked effect on the soil, in which was stored what was unavailable or dormant food, and in order to make this of any use to the plant it must be converted into the available condition, viz., one in which it was possible for the plant to take it up.

It had been asserted in America of recent years that all soils contained sufficient plant food to provide for a normal crop from year to year if the plant food were converted into the available condition, and one of the great factors in converting nitrogenous and potash compositions into their available condition was lime. Although at first sight it might seem as if liming was hardly a part of cultivation, they would on consideration recognise how important a factor it was in the cultivation of the farm. That was where virgin soil came in. The available food vanished, and the other was unavailable till the lime helped to liberate the forms and make food available for the plant, which could not take it in till it assumed a nitrate form, which was encouraged and made possible by lime. The term cultivation included all the processes during the growing of the crop, tillage being only a part of the whole.

Thirdly, there was proper tillage, which, more than anything else, had its effect on the fertility of the land. While they all might consider their own tillage system the best in use at present, he trusted that they realised all could be improved upon. In the first place, tillage to be proper and effective must be cleanly; for the farmer to allow his land to get filthy was simply to allow all the most available plant food to be taken up by weeds. In the second place, cultivation and tillage to be effective must aim at conserving the moisture, especially in such a climate as this. Everything must be done to keep the fallow land moist. It was estimated that with good fallow four inches of rainfall could be conserved. The most effective way to get rid of this moisture was, of course, to grow a good crop of weeds on the fallow. In the third place, that brought them to the question of deep and shallow ploughing. Much depended on what was to be sown, wheat and barley, for instance, being totally different in their requirements under this head. The latter was a shallow plant, while the wheat roots had been traced as deep as 26 ft. in the soil. With deep-rooted crops it was necessary to do something more than scratch the soil. It did not matter how much land they held; they could not make the best use of it by scratching the soil. As an example, they might note the effect of deep ploughing and subsoiling on the production of root crops in the old country. It was a mistaken idea that deep ploughing tended to the dissipation of moisture and its consequent waste. On land with a retentive subsoil they should never go in for shallow ploughing. Deep ploughing, however, must be a gradual process. It would be folly to deep plough all at once. If, for instance, they had been cultivating to a depth of 3½ or 4 in. for twenty years, it would be fatal to increase the depth 2 in. at a time. The deepening process must be extended gradually year by year, from ¼ to ½ in., and so to an inch by degrees. In this way the soil would become beautifully mellowed. Where the subsoil was retentive the water was held below, and deepening the soil would assist the plant in getting to that water, encouraging what is known as capillary attraction. Where the soil and subsoil were of a more porous nature, then deep ploughing was not to be recommended. On land of this nature anything over four inches was too deep, for by deepening in such cases as that it would encourage the too free percolation of water through the soil. The whole process of tillage had for its object cleanliness, conservation of moisture, and the production of fine tilth. So far as the latter was concerned it was necessary for the proper germination of seed. They wanted the soil to be fine and spongy, so as to lie close and press upon the seed, and that the films of moisture lying about the particles of soil might bring about that mysterious process known as germination.

To bring about proper tilth on many soils was a difficult matter, and repeated turns of the cultivator, harrow, and roller must be resorted to. He was surprised to find so little use made of the harrow and roller, and that brought him to another point. After breaking down the soil in order that germination might be encouraged and a firm, close bed secured for the seed, he would impress on them the necessity of using the roller after the covering harrow. This was a practice almost out of use in South Australia, but one that in the old country was considered an essential to good tillage. If the soil got encrusted by the use of the roller a turn of the harrow after the wheat was up would do the crop no harm so far as pulling it up was concerned, but rather gave it fresh stimulus to good growth. In Australia they had not yet fully grasped the idea of rational rotation and had not sufficiently realised what the crops take from the soil of its substance. The three most important properties were phosphates, nitrates, and potash. The following table shows the amount of soil ingredients withdrawn by various crops (in pounds per acre):—

	Potash.	Lime.	Phosphoric Acid.	Nitrogen
Grain, 20 bushels	7·85	·72	11·90	24·00
Straw, 3,600 lb	36·07	10·32	7·90	18·00
Hay, 4,800 lb	43·92	11·04	19·80	42·00
Lucerne, 1,200 lb ...	161·88	274·32	77·16	155·52
Sugar beet, 74,000 lb ..	387·44	224·08	116·16	173·4

The following table showed the approximate losses of fertilising materials from different systems of farming:—

	Nitrogen.	Phosphoric Acid.	Potash
All grain farming	5,600	2,500	4,200
Mixed grain and general ..	2,690	1,000	1,000
Mixed potatoes and general	2,300	1,000	2,400
Stock and general ..	900	50	60
Dairy farming	800	25	85

He could not do better than at that stage reply to the question which had been asked him already that week: "What would be the effect on the fertility of the soil of the continued use of phosphates?" To that he might reply by asking:—1. What could the farmer do but add phosphates? 2. Had he benefited by it, viz., had it paid him? 3. Was there any other way of treating land to give similar returns? 4. Was land decreasing in fertility by its use? To that he might answer in the negative except in a few cases, but he feared that eventually land would become less fertile from the want of potash and nitrogen, and in order to keep its fertility it would be necessary for farmers to add these two manures along with the phosphates. In older countries, where farmers were not dealing with what they called virgin soil, they had to add not only phosphates, but potash and nitrogen.

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Evergreen Grafting.

In the past nurserymen of this country have done but little in the way of grafting evergreens, relying for a supply of such kinds as needs propagating in that way on the nurseries of Europe. But it is practicable to raise them at home if desired, and to some extent they are now being so raised.

The usual practise is to pot a lot of stocks and grow them for a year in advance of grafting; and they should be potted properly to insure a sturdy growth, for the more vigorous they are when grafted the better the success of the operation. With such open weather as we are having nothing would hinder the potting of such stock now, and under a greenhouse stage or in any similar stage they could be set until the close of Winter, when they could be placed outdoors in some favorable situation for the Summer.

Regarding the kind of stocks to use it is best to keep as near relationship as possible.

In the case of varieties it is generally possible to get the typical form for a stock. Varieties of white pine, place on the common form of the American, and so forth. But it is not necessary that this be done. There are groups of pines, some with two needles and some with three, others with five, and generally any one of a group will answer for another in the same division. The individuals of some groups are so much alike that their relationship can be told without the aid of the foliage.

In the white pine group for example there are the flexilis, monticola, excelsa, cembra and others, all clearly indicating they are allied. For varieties of spruces the common Norway spruce has long been used, answering well for its own numerous varieties and for those of all other spruces.

It is the lot of the common native Arbor vitæ, Thuja occidentalis, to be employed for all sorts of Arbor vitæs, and this includes the Chinese, but as seedlings of the latter are so easily raised there is no necessity to use the other. Besides its own kinds, the American Arbor vitæ acts as a stock for retinisporas, but as the latter are rapidly increased from cuttings there seems no need for grafting them.

For firs, the common European one, Picea pectinata does very well for all, numerous as the species are. Its use is recommended as being the most easily obtainable of all and the cheapest.

Having coniferous trees in mind while penning these notes, the larch and the deciduous cypress may be mentioned, though outside the evergreen line. The larch takes in all the various species and varieties of it as well as the pseudo-larix Kæmpferi, and all can be worked on the common European larch, Larix europæa. And for the varieties of taxodium, including the one known as Glyptostrobus pendula, use the common deciduous cypress.

A Vine for a Low Wall.

It is so seldom that the European radicans is seen used as a climber that it must be because it is not generally known that it will climb.

When first introduced here from Japan it was treated as a shrub, and not until some years later was it understood that it was a vine. The knowledge came about through the letters of a traveller in Japan, who spoke of the appearance of the vine when covering the trunks of trees to a great height.

It may be thought that the vine itself would disclose its nature, but, as in the case of other vines when set out as a shrub, it takes on the character of one, and this euonymus, when planted with nothing to support it, forms itself into the shape of an Irish juniper—slim and tall.

As a vine for a low wall it is well fitted because of its comparatively small leaves and slow growth.

Walls of about four feet on which it has been planted present a pleasing appearance. Tall walls demand a vine with large leaves as a rule, such as the English ivy or the Ampelopsis Veitchili or virginica, and one that grows fast, hence the euonymus is not just the vine for them. As it grows it sets very close to the wall, giving a prim and very different appearance from the aspect the ampelopsis presents.

There are positions a very close-growing vine will better suit than a free-growing one and the vine planted will be in accord with the effect desired.

Besides the green or typical form of this euonymus, there is a variegated leaved one, and it is as good a grower as the other. The two sorts afford the opportunity of selecting the one to be used best fitted for contrast with the surface it is to embrace. The variegated-leaved one would be out of place set to a white wall.

This euonymus is a true evergreen, and no matter how cold the winter the plant has never been hurt.

Preserving Decaying Trees.

A very good practice observed of late is the filling with cement the holes in trees caused by decay. It takes a lifetime to grow a fine tree, and it is a shame to neglect one suffering from a decaying part when filling the hole with cement would remedy it. It is air and moisture that cause delay, which if excluded puts an end to the trouble. The best way to proceed with cementing is to scrape away every bit of decayed wood met with, even using a chisel or scraper to do it if necessary. When all has been gotten out, wash the hole with Bordeaux mixture, to kill any fungus that may be there, then fill it with cement, solubly, until the surface of the new bark is met. When so treated and the work well done, trees will flourish and be almost as good as ever. The inner wood of trees has no life anyway, it is only the outer layers that have, but when it is firm it sustains the tree in position, preventing its blowing over, and thus we need it to preserve its inside wood as well as the outside living portion. Where it has been tried the cementing has given satisfaction.

A Grand Oak for Parks.

It is a wonder the swamp white oak, Quercus bicolor, is not oftener used in plantings. It is a grand massive tree when developed, with large handsome foliage. A valuable point in its favor is the ease with which it transplants. It does this better than any other oak, excepting the pin, Quercus palustris. These two are provided with more roots than any other oak, and this fact might give a few who think that trees are as well planted with roots well stubbed in room for rumination. There is no question that they have more roots and transplant easier than others.

The common name of the Q. bicolor, swamp white oak, is a misnomer. They have been known to grow in low ground, never in swamps. Nor would the tree thrive in such a place. Many trees will thrive on hillocks in swampy ground. Scarlet, black, pin and willow oaks grow in such situations, but no one thinks of calling them swamp oaks because of this.

It pays better to run a dairy without a dog; the cows are quieter. A dog that will nip their heels will cause kicky cows. The moment one touches the cow's leg while milking she will kick, thinking the dog is after her. I used to think it was impossible to get along without a dog to drive the cows with, but since we have been without one the cows are much quieter, and they do not offer to kick. I have no fault to find with a dog for other cattle.

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The Dairy.

By A. H. Harris.

Milking.

The dairy business cannot be learned in one day, one month, or one year, even if one does read all he can about the business. Reading about the dairy and running the dairy are two different things. There are things we must practise before we will learn them. Milking is one of the things—we become expert only by practice. One who can start and milk a steady gait will have better results than the one that milks fast, then slow, then fast again. We must learn to milk a steady gait, and as fast as it is possible for us to keep it up, till the cow is milked dry. Feeding is another thing we must experience before we can feed successfully. What each cow wants, and the actual quantity she wants, we must learn by actual practice.

Best Dairy Cow.

It is almost impossible to buy a number one dairy cow: she is seldom, if ever, for sale, and if she is for sale, a friend or neighhor will get her. We cannot tell the value of a dairy cow until we have milked her through one period of lactation, and used the scales and teeter in determining the quantity and quality of her milk. She may have a perfect shaped body and udder, and yet be defective in some way. She may have the self-milking habit, a kicker, a breachy cow, or hold her milk, and not let it come down as she should, or some other habit that would make her an unprofitable cow. The best way is to breed the dairy herd by careful selection of dam and sire, and nsing only the very best milk strain to be had.

Feeding.

I have learned that a cow will fail to yield her owner a profit on an empty stomach and the shady side of a barb wire fence for shelter. She must be satisfied with both feed and shelter for twenty-four hours a day, seven days a week, and fifty-two weeks in a year, in order to be profitable. Comfort means profit with a cow. If she is satisfied she will not need an iron yoke or the crotch of a limb to keep her from going through the fence.

Recording Milk.

I have learned that keeping a record of each cow's milk, of both quantity and quality, will promote better care in feeding, also promote better cows. The time it takes to do this amounts to but very little, and will detect the robbers in the herd.

Feed.

I have learned in the past season that my cows running in the pasture would fall off gradually four or five weeks, then after a good shower they would go back to their former yield per day. If I had snpplied them with feed dursng that time my profit would have been much greater.

Breed.

It pays to get a good milk breed. They are generally of a kinder disposition, and when you feed a dairy cow she will show it in the milk part and not laying on flesh; with the half-breed it is just the reverse.

Shed.

It pays to keep the cows clean and also the milking shed, by having a floor of some kind and a gutter about six to eight inches deep and sixteen to eighteen inches wide behind the cows; it is then an easy matter to keep the cow shed clean. The floor should be cleaned both morning and night.

Weeds.

By feeding the cows after milking the milk will not have any disagreeable odour from the feed we may give them. In my part of the country we are bothered very much with wild onions or garlic in the pasture, and for a few weeks in the Spring we could hardly use either milk or butter, but when we take the cows out of the pasture three or four hours before milking the smell of weeds cannot be detected in the milk or butter.

Beets.

Sugar beets and sugar beet tops make very good feed, but must be fed carefully, or they will cause the milk to have a peculiar odour. Should not be fed heavy, on account of the strong odour they cause. Tops make much better food wilted, but if fed very heavy it will take a long time to churn the cream.

Lucerne.

I have learned that a calf given lucerne hay as soon as it will eat it will make a better calf than on any other feed I ever fed. I have reared as good calves on separated skim milk, oil cake and lucerne hay as can be reared running with the cow. Oil cake and lucerne hay are cheaper than butter fat.

Herd.

I have learned that it will take years to build up a very good dairy herd, and that we must be very careful in breeding and purchasing our herd. My plan in starting out would be to purchase good heifers, just a little before they come fresh. By careful selection and care one can build up a good herd in a few years.

Profits.

I have learned a great deal in the past year, no doubt have learned only what others in the dairy business have learned years ago, and I expect to learn a great deal more if I stay in the business. I intend to stay in it too. I find that it requires attention every day. We have no days off; we do not have to wait till the end of the year for harvest, it comes every day; it is a very good teacher to teach one to tend strictly to business. When we work by the month or day, and we lay off a day, one's pay stops too; we would lay off a great many days if we could lay off and draw pay too. In the dairy business, if we neglect our work for one day, we not only suffer loss for that one day, but for days to come. I find it is a very good business for one that has a family growing up, for it teaches them to be industrious and helpful, but I have learned that I cannot tell the boys to do this or that, but when I am with the boys, and say come let's do this or that thing, we accomplish something.

When Danes went milking they put on white suits—cheap, certainly, but easily kopt clean by washing. In New Zealand, on the other hand, people generally put on the worst clothes they had as overalls, and he had seen pants that would stand alone.—J. A. Kinsella. New Zealand Government Dairy Commissioner.

Any system of dairy instruction or inspection which does not include the producer is faulty. The need of the hour is up to date supervisors qualified to preach the doctrine of cleanliness and advanced dairy knowledge.

Among the crying needs of the butter industry in Australia is better buildings, better sanitation, and better equipment. Another, and not the least, is better and cleaner supply of raw material upon which to show our factory managers' skill in making a finished product.

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How to Get Rid of Cockroaches.—Among the remedies used in the ordinary house where the run or hiding places of the pests are located, is to puff in Paris green. An excellent bait is powdered chocolate and borax, equal parts; grind it up in a mortar, so that it is thoroughly mixed; dust into their hiding-places or place in bunches here and there, covering up all food at the same time.

South Australian Utility Poultry Club.

The objects of the above club are—

To encourage the breeding of pure birds with due regard to utility, by breeding only from selected layers.

To give prizes for the most efficient and economical system of packing and marketing poultry produce.

To give prizes at exhibitions for table poultry.

To give special prizes for eggs in three classes, white, tinted and brown, instead of only white and brown as at present.

To establish laying competitions between pens of birds under proper management.

To obtain the best advice for members on all matters relating to the selection, breeding and keeping of poultry.

To facilitate change of blood from good laying strains between members.

A register will be compiled of the breeds kept by each member, giving particulars of strains, situation of runs, and other information (copies of which can be had of the hon. secretary), so that the difficulty of getting birds of known laying strains should be considerably lessened.

POULTRY.

By D. F. Laurie.

Scratching Sheds.

Their Character.—Many poultry owners find the problem of feeding laying hens a difficult one. If too small a supply of feed be given, the hens are unable to produce eggs; if too much food, especially if unsuitable, be given, the birds become over-fat and lazy; and a lazy, over-fed fowl is on the sure road to ruin. It has long been an article of faith among the more experienced breeders that fowls should be kept busy all day in their search for food. The books recommend you to scatter the grain in litter, so that the birds may obtain exercise and occupation in searching for the food. It was a brilliant thought which occurred to the man who adopted the modern scratching-shed system.

Although I have referred to this question before, the time is now opportune for again urging consideration of readers. In some of the large poultry establishments each poultry house has a scratching shed attached, thus forming a portion of the building. In very cold climates these sheds are somewhat elaborate of construction. Some in use in this State are really part of the roosting house, which for, say, eighteen or twenty hens and pullets, is about 14 ft. long by 5 ft. (about) wide One half is fitted with perches for roosting accommodation, and is generally closed in front, the most approved form being the movable front, which is closed down on cold nights, but it is raised to serve as a verandah in daytime The front of these combined houses is, as a rule, wire-netted, and provided with a wire door or movable wire screen. By this method the birds are secure from predatory animals, and may also be kept sheltered on wet days. The half not used as a roosting house is used as the scratching shed, and is floored to a depth of about six inches with straw, or, better still, "cocky" chaff (wheat chaff.) In this the grain is scattered, and therein the fowls scratch and work. The scratching material is retained by means of a nine or ten-inch board in front of the shed, which also divides the roosting portion from the scratching sheds. In cold climates light oiled muslin curtains (on frames) are used to divide the compartments at night, and to shelter the birds during days when the weather drives into the house.

Although I am decidedly in favor of substantial iron houses, with as little woodwork as possible, still the cost of these is sometimes a bar to their general adoption, and something cheaper is sought. If every poultry-keeper were scrupulously attentive to cleanliness in all matters, especially with regard to vermin (including tick), the necessity for urging the adoption of the sanitary form of house might be less. However, a cheap scratching shed may be adopted which will to a large extent answer the purpose. This may be a continuation of the poultry house or may be detached and erected in a sheltered position. The form may be a plain, lean-to roof, erected on a light framework, resting on four posts, which may be about 4 ft. in front and 3 ft. to give slope to a roof of iron, zinc, or even cut kerosine tins, fastened to battens. The front, ends, and back may be enclosed with wire-netting and a door provided, and all around the bottom a board 9 or 10 in. high is provided to retain the scratching material. The ends may be permanently closed with curtains made of split wheat sacks, and a movable curtain of similar material may be provided, which can be used to enclose the front or back, according to the direction of wind and weather. A shed 7 ft. by 5 will accommodate a dozen or more hens, and will cost but a few shillings.

The Object of Such Sheds—Reference has been made to the difficulties in apportioning the correct amount of food, and also in keeping the birds in health. Birds running at large in good country obtain much natural food, as a rule by dint of continued scratching. The process of scratching keeps the birds occupied, thus they do not contract feather-eating and other vices; it provides exercise, which promotes digestion and health generally, and with young stock assists development. In cold weather the exercise promotes good circulation, and keeps up the body temperature continuously, which no carefully prepared hot foods can do. The food is consumed gradually, and has to be sought and found before eaten.

Birds should have their first meal as soon as they are off the perch in the morning, and on farms there is, as a rule, a great deal of work to do at this period. The suburban breeder may find it very cold work to rise before daylight and get hot water for mixing his soft foods. If a full feed of grain is fed to the birds in the early morning, as is often the case, hunger may be satisfied, but as a rule egg production and health are not stimulated. By adopting the scratching-shed system all these troubles are saved.

The last thing at night after the birds are on the roost a supply of grain should be scattered and raked in to the scratching material. Early in the morning the busy farmer or the bed-loving party may rest in peace with the knowledge that each scratching shed is the scene of much satisfactory activity. Keep the litter clean and allow no accumulations of droppings, and you will find eggs in abundance and disease a stranger. In fine weather the door remains open so that the birds can prospect the yards or farm when the grain in the shed is finished—at midday give a supply of green food and see that the drinking water is fresh and clean.

Half an hour before roosting time the birds may have their soft food or mash, in which may be mixed bonemeal, meat, soup, cut green bone, milk, or any variations and additions to the bill of fare. Where a supply of grain diet is adopted the afternoon meal should be about an hour or an hour and a half before sundown, so that the birds have time to get a fair feed. In any case the best results accrue where the birds are kept scratching all day, but not eating too much. Their condition can be ascertained by handling at night.

Those who have not tried this method are advised to select two equal numbers of their average hens and pullets. Place one half in yards and treat by the ordinary method, and provide the other half with scratching sheds. Unless a perverse fate has selected all the drones the scratching shed lot will be a long way to the front at any period of the year. Do not forget that a plentiful supply of hard grit, as an aid to digestion, is essential to success under any system, and also that laying hens must have the elements in their food wherewith to produce eggs and also to provide the shells.

Hatching.

Despite opinions to the contrary, the advice I have given for many years is to hatch early, and those who have laying hens and ducks should mate them up and hatch out a good lot before the very cold weather comes. Since reliable incubators and brooders have become available, the old trouble about broody hens has vanished. In addition, the practice of early hatching has resulted in obtaining pullets which have been laying all the summer, and with certain breeds are now providing a supply of broody hens for those who prefer the natural to the artificial method. In well-regulated yards, as the male birds have been separated from the hens for some time, they should be in good buckle, and should ensure a high percentage of fertile eggs and vigorous chickens.

Disease.

Unfortunately, as considered probable, there has been great mortality due to internal diseases, such as chicken cholera, due to similar organisms. Treatment is extremely difficult, as when the trouble is noticed the disease is generally too far advanced. It cannot be too strongly emphasised that this class of disease is due to want of care during the hot months with regard to drinking water and water vessels and general cleanliness. Until these facts are realised and acted upon there will always be these heart-breaking losses. All drinking vessels should be frequently scalded, or, if of earthenware, placed on the fire, so as to destroy the disease germs which are generally present I am sure that the use of smutty wheat and damaged grain generally is a source of much disease, as I have invariably noticed trouble resulting from the use of such foods.

It is hoped the recent rain and change of weather generally will check the disease. But, as the rainy season is at hand, no time should be lost in thoroughly cleaning all yards, and, where possible, hoe, dig, or plough the surface, so as to bury the contaminated soil.

Apply lime around roosting houses and gateways or wherever the birds congregate. If quicklime is used for this purpose the birds must not be allowed access to it until well slaked. Quicklime if eaten by fowls generally kills them, owing to its corrosive nature. Any hollows or depressions should be filled up, otherwise if water gathers it will be polluted, and fowls have an extraordinary *penchant* for such to their detriment. Keep a careful watch for colds and act promptly, as suggested in "The Poultry Manual."

Purchasing Poultry for Export.

In response to a request made by the Utility Poultry Club, the Hon. the Minister of Agriculture recently agreed to purchase 300 chickens and ducklings, if passed by the poultry expert as suitable for export. The price agreed to be paid to the owners was sixpence per lb live weight. It was stipulated in a circular issued by the Utility Club that the birds were to be young and in plump condition.

Very few birds have been passed as suitable, and while a fair number were sent in to the Produce Depot, it is very evident that those breeders who sent them have little, if any, idea of the requirements of the case. Considering the number of local breeders who are deeply interested in the progress of the industry, and who consider themselves masters of all pertaining to the business of poultry raising, the lack of good birds is surprising. There is, of course, the knowledge that our local markets are ill supplied, and on that account many breeders are satisfied with the prices they obtain locally.

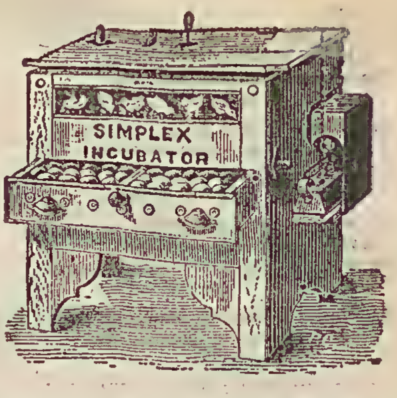
Still, when a committee, representing a body of breeders, asks for assistance, and strengthens its case by a promise of some 200 suitable birds from members of the club, one might reasonably expect that at least these birds would be submitted for examination.

While some breeders may be able to properly fatten their young birds, it is patent that the majority either cannot do so, or else do not know what constitutes a fleshy or meaty bird. It is largely a question of proper feeding, but there is no doubt certain classes of birds lend themselves more readily to the fattening process than others. The game cross has been consistently advocated since the first issue of the journal of this Department.

The first lot of birds at the Depot which were passed for export were crossbred Indian Game—Buff Orpingtons. The next lot were crossbred Malays. The latter, although fine birds, were very yellow, and trifle leggy; otherwise excellent. A large proportion of our Wyandotts, Orpingtons, etc., have been bred for egg production, and there is no doubt that the laying type is not the best for table bird production.

Attention must be also paid to the flesh-producing type of any breed if it is to succeed as a table bird breed.

Our advice on this subject is to select long-keeled, square, prominent-breasted hens, low on the leg, and fine in quality, and well grown. Mix these with typical Indian or Old English Game males, and the progeny will, with fair attention, give satisfactory results. The Malay, although it gives great weight and plenty of meat, is not equal in many respects to these two.



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There is something to be said in excuse for the poor quality of the numerous ducklings submitted. It was invariably found that they were some weeks too old, and also in process of moulting, and thus had already lost considerable flesh. Certain weights are stipulated as the minimum, but it must be observed that, while a chicken or duckling may be of the required weight, or even in excess of it, still the bird may be so deficient in breast meat as to be quite unfit for export. Only the birds suitable can be sent; any others would bring discredit upon us.

Poultry as Change of Diet

Poultry should enter into our ordinary diet to a much greater extent than it does, not only as a welcome change, but on health grounds, which any medical man willl explain. Several breeders who turn out really first-class, well-grown, meaty chickens and ducklings, complain that their customers object to pay a fair price, less as a rule than ordinary butchers' meat.

It is an unfortunate fact that many people have no knowledge of the difference between prime and inferior poultry, and have but one thought, and that is cheapness. This trouble is not confined to those who have, perhaps, to cut their coats according to a limited supply of cloth. Others not similarly situated are imbued with main ideas of cheapness.

Unless one accepts the argument that a tough old fowl will keep the consumers (we cannot say diners) longer occupied, there can be no proof that such a bird is cheap. If one wants a pleasant change of diet, and a profitable one, then one must deal in young well fattened birds.

On the other hand many complain that they cannot obtain the best class of poultry, although quite willing to pay the price. It is quite evident that the method of disposing of poultry needs alteration. It is in this direction that associations of breeders can do most valuable work.

Judging Table Birds.

The following was the standard to which the birds at the Table Bird Show in Sydney were recently judged:—Size, 15; quantity of breast meat, 40; straightness of keel, 10; fineness of bone, 10; general evenness of appearance, 15; color of skin, 10; total, 100.

The late Mr Lewis Wright proposed the following scale of points:—Size or weight, 20; straight breast, 10; length of body, 15; breadth of body, 5; eveness of flesh and freedom from fat, 15; skin and color, 15; fineness of bone, 10; touch, 10; total, 100.

The Mighty Egg.

The following lines are culled from an American journal :—

Tell me not in broken measures
 Modern farming does not pay,
For a farm produces chickens,
 And the hens—do they not lay?

Eggs are high and going higher,
 And the price is soaring fast;
Every time we get to market
 It is higher than the last.

Not a coop but it produces
 Every day an egg or two,
So each farmer gains his millions,
 Even though the hens be few.

Every egg is very precious,
 And the hens are held in awe.
When a hen begins to cackle
 Then ths farmer goes "Haw, haw!"

In the broad and busy farmyard
 Struts a rooster now and then,
But the shrewd, bewhiskered farmer
 Only notices the hen.

Trust no rooster, howe'er showy,
 Be the feathers in his tail;
Pay attention to the biddies,
 And your wealth will never fail.

Lives of farmers all remind us
 We may roll in wealth some day
If we hustle to the market
 With the eggs our pullets lay.

Anyone can get eggs in summer when they're cheap. Try to be different.

Cold storage eggs will never sell as high as new laids—try for the latter.

A plentiful supply the year round depends on good breeding, rearing and feeding.

Some poultrymen would get as many winter eggs out of a brass hen as others would from the best of layers.

When you don't get eggs blame the hens every time. The boss will be pretty sure to blame you, though

Common eggs are always going cheap.

Strictly fresh eggs always sell at good prices.

Feeding on 'refuse' means strong-flavoured eggs.

If the pullets aren't laying look for lice or worms.

Overcrowding the pullets pulls down the yield.

It pays to exercise care at this season when every egg counts.

How to Clean a Buggy.—All owners of such vehicles as buggies, pony-traps, or cabs know what a difficult matter it is to perfectly clean them after travelling through mud and slush. They are hosed down, washed with a cloth or sponge, and yet when dry the polished wheel-spokes and bodies appear smudged and unclean. To overcome this, try a recipe—After washing the mud, dust, etc., from your buggies, carriages, and wagons, let them get dry. Then take linseed oil and saturate a sponge or cloth and go all over the buggy. You can see at once the effects. It will take the mud stains and spots all away, and give the trap a gloss and appearance of a new vehicle. We have practised this for quite a while, and it gives good results.

Cure for Rheumatism—Prom an exchange we take the following remedy fer rheumatism which is vouched for by a lady who was a victim, to rheumatism and sciatica. The remedy is "cotton-batting," or cotton wool in sheets. For weeks she had suffered from sciatica, and, remembering that she had seen cotton wool used for rheumatism successfully, swathed her leg in it from hip to toe In less than a week she was up and about the house. The pain left entirely, and did not recur. Acute rheumatism and obstinate neuralgia will yield to the same treatment. When the pain has ceased, the wrapping should not be removed too suddenly, as the parts which were covered are very sensitive to cold. Therefore, something less bulky should be worn for a little time after removing the cotton batting.

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The Australian Gardener

CONTAINS—

Flower Garden—

Chrysanthemums — Annuals and Perennials—Nursery Bed — Roses—Bulbs —Windbreaks—Plants under Hedges —Lawns

SHADEHOUSE——Petunias—Pelargoniums Heaths—Begonias—Camelias

STOVEHOUSE — FERNERY — PITS AND FRAMES

The Kitchen Garden.

Orchard—

Planting — Combating Insects — Late Transplanting—The Spanish Codlin Moth Parasite

Agriculture—

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The Dairy—

The Treatment of Milk Fever—Rules for Cream Suppliers — Inferior Dairy Tinware—Prevention of Tuberculosis

The Poultry Yard—

The Muscovy Duck—Do Incubators Pay? —Fattening Poultry

Miscellaneous.
Etc. Etc.

The Garden.

By the Observer.

Chrysanthemums.

Where chrysanthemums have been left until late in pruning the plants are still in bloom, and there is good reason for delay in cutting back a portion of the plants, because we have the flowers with us for a much longer time. It is possible to get blooms very early as well as late by regulating the cutting back. Those plants that flowered early or at the regulation time should have been cut close down when the flowers had withered, and by this time should have made about 4 in of new growth, after being cut down and turned out of the pots and placed in a shady corner. If so, the plants should now be pulled in pieces, and the best rooted and stoutest stems should be replanted in good, rich, sandy loam. The rest of the plants can be given to some friends who connot afford to buy single plants, or they can be planted in back corners.

Annuals and Perennials.

Plant out all hardy annuals and perennials that are large enough to be dealt with ; also any half-hardy plants that have been raised for experiment. These should first be tried in the most sheltered places, and later in more exposed spots. Asters will withstand a lot of cold when they have grown up a bit, but are rather tender whilst quite young Phlox drummondii, French and African marigolds, and many other desirable plants which are termed half-hardy in Europe, will grow in our open beds when they have become established. If there are no plants ready it is possible to buy pots of seedlings at the shops or from the nursery gardens. The proprietors of some of the best and most reliable seedshops are publishing free illustrated and descriptive catalogues. When buying a few shillings worth of seeds or plants it is right to ask for one of these as a guide. A visit to the Botanic Gardens occasionally will also give a lot of valuable and practical knowledge.

Nursery Bed.

Make a nursery bed 5 ft wide 4 in deep and any desired length on a piece of hard ground by laying bricks around the edge or fixing boards or planks on edge. and fill level with rich sandy mould Make a roof over this of sufficient height to allow of access for weeding and watering. Score or indent the surface of the soil half an inch at intervals of 2 in and thinly sow seeds of tender and half-hardy annuals for experiment. Cover the seeds with light soil from an eighth of an inch or more according to the size of the seed and press down lightly, then water with a mist, so as to avoid washing the seeds out. Do not sow many seeds of each kind, but try a few balsams, asters, amarants, variegated beets, kales, gallardias, lagunarias and other gourds, browallias, coreopsis, capsicums and other peppers, cuphea, datura, euphorbia, gomphrena, helianthus, heliotrope, hibiscus, ipomea, martynia, mimulus, nicotiane varieties, portulaca, potentilla, rhodanthe, salipglossus, salvias, tagetes, vines, waitzia, xeranthemum, zinnia, and many others. Of many of the above there are several varieties, differing materially from others in shape, size and color of the flowers and foliage. Of course there will be some failures, but the remainder of each packet of seeds can be kept until later. Wait until the plants are well started and then plant with a nice ball of soil attached to the roots.

Carnations, pinks, picotees, and all others of this family should be planted at once. All surplus from greenhouse and shadehouse should be planted in the open beds. It is injurious to crowd plants anywhere. For color effects it is desirable to grow chenopodiums, iresenes, echeverias, variegated beets and kales, coleus, amarants, and others, some of which are ready to plant now ; whilst others are tender, and should be left until end of September. Every imaginable shade of color almost can be secured by this method.

Antirrhinums, chrysanthemums, pentstemons, diplacus, spiraes, plumbago, and plants having a weaker habit of growth may now be lifted, divided, and replanted in fresh places, because the old spot is not suitable for them, and the new plants will be stronger and more healthy.

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Roses.

If the roses were not pruned last month do it now, but do not cut below the places where they were budded or grafted. Do not prune tea, Noisette, climbing, pillar, Bourbon or Banksian roses any more than is necessary to keep them within bounds. Make and plant cuttings of any kinds of roses. When pruning standard roses leave arms a foot long so that the foliage in summer may shelter the stem against the scalding effects of the summer sun. Any other deciduous plants should be pruned if necessary, but evergreens should be left until the weather begins to get warmer.

Bulbs.

It is well to allow tree bulbs to remain in the soil for three years, but the surface even then should be covered with some litter, and a tall label should be put in to prevent injury from the spade when digging. Other bulbous and tuberous plants may be lifted and put away in dry sand for a few weeks.

Windbreaks.

Where the garden is exposed to all winds that blow it is necessary to provide a shelter by planting a windbreak. This should not be too near, else the protecting trees will rob the plants in the garden. Eucalypts send their roots along the surface to considerable distances, and grow rather too tall where land is of high value. The shelter belt should be about a chain distant and may consist of Tamarix or Spanish reeds (called bamboos here), silky oak (Grevillea robusta), olive, Australian myrtle (Myoperum insulare), carob, Rhamnus alaternus, Maclura aurantiaca, or anything else suitable to the locality. A single row will be of no use, but at least three rows are wanted, and a mixture of tall and shorter trees and shrubs will make a break which strong winds will not get through. Others will grow more quickly when thinned judiciously.

Plants under Hedges.

Agave, barberry bushes, aloes, cacti, exocarpus, ivy, junipers, periwinkle, pittosporums, and violets will grow well beneath the shade of trees. This is useful to know when it is desired to make a close wall of foliage. Among climbers suitable for the same purpose are Tecoma australis (two or more varieties), Tecoma rubicunda, Tecoma nigricans, Tecoma rubiflora, and some others which grow very strongly and quickly.

Lawns.

Let the buffalo grass grow alone now to mature its growth and strengthen its roots. Do not mow it until the end of August, when some fertilizers and water, after mowing, will start it vigorously.

SHADEHOUSE.

Thin out some of the dense growth on the climbers overhead, and let in some light. All pots should be lifted on to the top of the plunging material, or the latter should be removed to the compost heap.

The Ballarat Gardens.

Destroy weeds in the pots, Remove plants about to bloom into the greenhouse, and make room there by bringing out any hardy plants which are not about to flower. Do not give too much water. Sow seeds of half-hardy plants in pots or boxes.

Slugs.

Slugs and snails should be treated to a dusting of newly slaked lime at night. If the pure white color is objected to some soot may be mixed with the lime powder. Place this in a branbag, walk along to windward of the beds after dark, beat the bags with a short stick, and the dust will fly and tickle the slimy pests. Twice a week treatment will get rid of most of them. Tobacco water will kill aphides and some other insects. Boil 4 oz of waste tobacco (3d per lb from the Government storekeeper, Port Adelaide) in a gallon of water to which 4 oz of soap has been added. Spray this on the affected plants; or if there are only a few plants put some of the mixture into a basin, carry it in the left hand, with thick gloves on the right hand, bending the ends of the rose branches or any other plants down into the liquid, so that the aphides shall be immersed. These insects always attack the youngest growths, and cannot do any harm elsewhere. The woolly blight (or American blight) is a species of aphis which does for planting in the open beds later on.

Petunias.

Place petunias in 6 in pots filled with rich mould in which some charred turf has been mixed. Use some nitrate of potash in liquid manure for these plants. The smaller petunias, for succession, should be potted up. Primula chinensis pots require filling up to keep the plants from toppling over. Use rich loam for the purpose. Cinerarias should have some weak liquid manure.

Pelargoniums.

Place pelargoniums in the pots in which they are to flower. A little weak liquid manure may be given. Pinch out the points of the branches to cause side growths, and the branches may be tied down to the edges of the pots, to cause a half-globular shape, which should be covered with flowers later on. Fuchsisa will take more water and more liquid manure, but in other respects may be treated in the same way as pelargoniums.

Heaths.

When Cape heaths have done flowering they commence to make new growth, and should be repotted into larger pots, but without breaking the ball around the roots. Do not give too much water, and never let the soil become dry. Sandy peat is the proper soil for these. Some of them are in flower in winter and others in spring. Do not prune these or any similar hardy wooded shrubs much. When new growth starts small pieces may be taken off and planted in peat under a bell glass, to provide new plants.

Begonias.

Plant cuttings of the shrubby varieties of begonia. Start a few of the tuberous varieties by lightly watering and placing them in a warm corner, and only increasing the water when growth demands it. Epiphyllums and others of the cactus family have done flowering, and may need larger pots, but must not be given too much root space.

Camellias.

Camellias are now beginning to break into bloom, and must not be over-watered, whilst giving enough. Shelter the plants against drip from above by means of strips of calico.

GREENHOUSE.

Bring in all plants about to flower in the shadehouse, and make plenty of room for them by shifting some hardy plants into the shadehouse. It is very injurious to crowd plants anywhere. Camellias must be treated as directed for the shadehouse. Calceolarias must be placed where cold draughts do not prevail. If fumigation becomes necessary, on account of aphides, these plants must be removed to another place and treated separately with insect powder or Gishurst, as they will be hurt by the tobacco smoke. Whilst they do not need as much light as some plants they should not be kept in too dark a corner. The other plants can be fumigated with tobacco smoke to kill aphides, and it is advisable to do this, even if no insects are visible, because there is a certainty that a few are present, and these will increase to a multitude within a short time. By killing the few the multitude will be stopped.

STOVEHOUSE.

The temperature must be maintained about 65 to 70 deg. F., but fresh air should be admitted—over the boiler if too cold outside. Water supply should be of about the same temperature, and then the house should be kept closed until the foliage is dry. Spraying the foliage is not always effective in moistening the soil in the pots, therefore some should be given to the roots.

Pot up anthurums, begonias of all classes, caladiums, dipladenias, cleodenrons, eucadonias, gesneras, gloxinias, and tydias in rich sandy mould, and water lightly from the tepid tanks. When growth gets stronger more water will be required. Place tropical orchids in a warm spot in good light, and give a little water. Australian terrestrial orchids will do well in the greenhouse.

Repot crotons, dieffenbachias, dracaenas, etc., in strong loamy peat, with intermixture of leafmould or old manure from the cowyard, and put enough charcoal at bottom to secure good drainage. Start Eucharis japonica in batches to secure succession of flowers. Sow seeds for decoration of the stovehouse and greenhouse. Wash crotons, palms, and similar hard-leaved plants with a decoction of 4 oz. each of quassia chips and softsoap in a gallon of water, then cleanse with pure tepid water, and close the place till next day

FERNERY.

All tender ferns should be in the stovehouse. Give fresh air when outside conditions are mild enough. Give access to light, but not directly from the sun through glass. Remove dead vegetation, and look out for slugs, snails, and other pests.

A Break in Pelargoniums

A few years ago a retired English lawyer (Lord Penzance) in the seclusion of his English home did what no rosarian seems to have previously thought of doing; that is, he began crossing the sweet-scented briar rose with various old-fashioned garden roses. What a happy union! for we have the graceful, rampant single-flowered roses in many pretty shades of color combined with the fragrant foliage of the sweet briar.

Well, some one has presented us with a cross between the oak-leaved scented pelargonium and a fancy or decorative pelargonium. Perhaps the cross has been effected before. The marriage has given notable issue, for while the foliage and habit of the plant has remained almost unaltered, even to the preservation of the foliar odoriferousness, the flower trusses are singularly improved—they are comparatively large, very bright rich rose-pinked, and are borne upon long upright stems. Now the next step will be to get a few large, double-flowered scented leaved varieties.

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Catalogues Free on application.

PITS AND FRAMES

Keep these filled with seedlings and cuttings recommended in foregoing notes. One pit should be used as a forcing medium by use of fresh short manure from a stable.

Queer Food for Plants

'How do you keep your palms looking so fine and healthy?' asked a young housekeeper of an old one whose apartment is a perfect bower of ferns and palms.

'I fed them oysters all Winter,' said the successful one. 'Whenever we had oysters for dinner I dig up the earth a little around the roots of the plants and put an oyster in each.'

'Himmel!' exclaimed the third who was a German, 'I pour the stale beer on mine always. It is fine for them.'

'Mercy,' said the young housekeeper, 'I wouldn't know whether I was running a conservatory or a table d'hote.'

A New Rose

Climbing Frau Karl Druschki.

This is a rose likely to become very popular in gardens, says the London Garden. It originated in the nursery of Wm. Lawrenson, Hutton Gate, Gainsborough, and received an award of merit from the Royal Horticultural Society in the Spring of this year.

It is of vigorous growth, and plants grown under glass in Mr Lawrenson's nursery have made 12 to 15 feet of wood in a season, and bent down with the weight of flowers. It will bloom in the dead of Winter, the flowers opening a very pale pink color, which passes to pure white, as in the parent. Its freedom of flowering is remarkable.

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A Few Hints

Immense damage is done every year by the white grub, the larva of the May beetle. Various remedies are mentioned. Our plan is to plow the potting soil (a sod) very shallow, and only pile it in very dry weather, when it is dust dry. In this condition not a grub or worm of any kind will be found in the soil, and we seldom lose a plant from their depredations.

The only remedy we have found for red spider is syringing with a very strong force of water. This knocks off the red spider, and prevents them multiplying.

Roses love an even moisture. Water should be given often, but not so freely as to keep the soil like mud. We believe more roses are damaged by getting too dry than by keeping too wet.

For rose soil, on our benches, we take a good sod, plow it three or four inches deep, give it forty two-horse loads of well rotted manure, one half-ton of hard wood ashes, and four tons of pure bone dust to the acre.

We use no manure on our roses after putting in the houses, but fertilise with nitrate of soda (half oz to the gallon) or manure water once a week, and during the season give the beds two or three sprinklings of bone black. We keep the soil stirred and open by scratching once a week.

Grafting the Bride, Catherine Mermet and Golden Gate roses improves them wonderfully: they should be planted farther apart in the greenhouse than the same varieties on their own roots.

Great care should be taken in planting carnations both in the house and in the field. The roots should be kept near the top of the ground, half to three-quarters is deep enough. More carnations are lost from deep planting than from all other causes combined. Deep planting is almost sure to bring on stem rot.

We never syringe carnations unless they have red spider, and we never have carnation rust. Carnations delight in a dry atmosphere, the foliage hardens and red spider and rust have little chance to get a footing.

A mixture of one part Portland cement and five parts of anthracite coal ashes makes a cheap and excellent concrete for side walls along solid beds in the greenhouse, and outside walls for greenhouses and for building. It is much cheaper than brick, and better for many purposes. We used hundreds of barrels of cement for this purpose, and to-day the walls are as hard as rock and far superior to brick.—J. Dillon in the Florists' Exchange.

The path of a good woman is indeed strewn with flowers, but they rise behind her footsteps, not before.—Ruskin.

Eggs are close things (says an old Chinese proverb), but the chickens come out at last.

Kitchen Garden.

SOWING seeds of various vegetables, planting out from former sowings and preparing ground for future crop is generally the routine work during the winter months.

Asparagus, onions, etc., should be transplanted, and sets of early potatoes planted in early situations.

Seeds of onions, peas, broad beans, cabbage, and other vegetables that will be required during the spring months should be sown.

Those who intend to raise tomato plants in heated beds should prepare the manure, etc., for the purpose. Fresh stable manure, with plenty of straw is needed, and it must be watered, stacked to ferment, and turned at least twice to insure an even heat, without which it would be useless to attempt the raising of delicate plants.

Dry, open, sunny positions should be selected for such beds, with some protection from cold winds.

Additions to the New Market.

The shareholders of the Adelaide Fruit and Produce Exchange Company, at a meeting held on Wednesday, 18th July, endorsed the policy of the directors in extending the market. Plans were submitted and approved, and these included about 90 extra stands, and six stores. The elevation in Union street will be on the lines of the Grenfell street frontage, and direct communication will be provided by road from Union street to East terrace, the whole making an extensive building. The work has been started, and will be finished by the time the very busy season arrives.

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ADELAIDE, Grenfell-street, and
PORT ADELAIDE, St. Vincent-street.

The Orchard.

Do not attempt to plant orange, lemon, and similar trees until the soil begins to get warmer. The check occasioned by lifting out of the nursery beds supplemented by removal into cold soil and cold air will probably kill the trees, or at any rate they will not make as much July progress or be as healthy as trees planted at the end of next August. Some people who sell trees do not care whether they live or die so long as they get the money for them, and they are ready to sell as many more to fill up the gaps. Such trees can be safely planted from middle of March until end of April, or from end of August until middle of October. After planting they will require some attention in watering, and the surface soil should be kept pulverised or be covered with some litter. When water is wanted the edges of the leaves curl inwardly. If the leaves assume a pale color it is advised to sprinkle about 2 lb weight of sulphate of iron over the area covered by the branches, Some bonedust or superphosphate and a little nitrate of potash is always beneficial if applied in the same way to orange, apple, pear, and other fruit trees.

Training of Fruit Trees.

(Mr. Geo. Monks.)

The aims and objects of fruit-growers should be to so train their trees that the fruit bearing area shall be as large as possible, compatible with the ability of such trees to sustain the weight of fruit which they are called upon to bear. Unfortunately, in the past, as far as most of the hills growers are concerned, trees were allowed to take their own way; and as Nature is not a good trainer of fruit trees, the result was bad; pruning having to be done at the eleventh hour, and trees that should have been shapely and well formed are an eyesore to all. The old idea, as far as length of stem or trunk of tree was concerned, was that it should be from 2 ft upwards. The present system, or at least the one generally adopted, is from 1 ft to 1 ft 6 in. It was also thought at one time that the higher the fruit grew the better was the quality; but that idea is pretty well exploded now, it being a fairly well-known fact that fruit grown within a short distance of the ground is not only of better quality, but of a more even and regular grade. It is also a fact, but perhaps not well known, that the lower the branches emanate from the stem the stronger they are, and the better able to bear the strain of fruit-bearing. No well-trained tree should be allowed to bear its fruit much higher, if any, than an ordinary man is able to reach it from the ground.

There are two ways of training fruit-trees, which I propose to deal with. Both systems require just about the same length of time, viz., about three years of winter pruning, to bring them into shape.

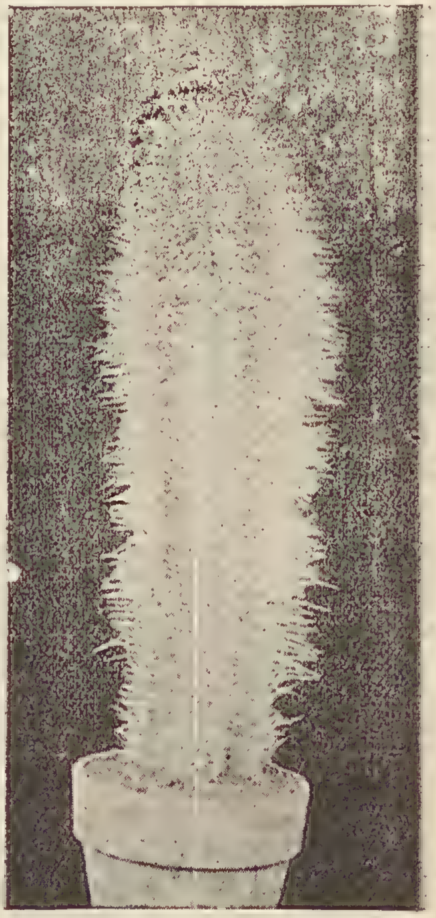
The first is to allow three main branches to grow from the stem, pruning each of these the following year, so as to produce six; and the next again cutting back so as to provide a tree with twelve branches. It will be seen at once that a tree of this kind which has only three branches emanating from the trunk has every year all the weight of fruit upon these branches. Take, for instance, a six-bushel crop. That means to say that each of those branches has to bear two bushels of fruit besides weight of foliage, etc. Rightly or wrongly, I am under the impression that twelve branches are too many for a fruit-tree—particularly an apple-tree—although some growers advocate at least fifteen.

The other system of training, and one which I am experimenting with, is to have at least six main branches, all starting from the trunk. Winter prune as in the other system for three ar four years, filling up, by means of summer pruning, all main branches with spurs from 2 in to 6 in long. I am satisfied, as far as my little experience goes, that six main branches are enough for a fruit-tree, especially an apple tree, and can be so filled up with fruit-spurs that no waste space is found; and, also, that each tree will bear the strain of crops much better than any other in existence Another great advantage it has, and that is a larger fruiting area can be built up with it, as there is not the same danger of breaking down the tree.

Export of Fruit to South Africa.

The Secretary to the Commonwealth Department of Trade and Customs has forwarded to the Secretary for Agriculture the copy of the following communication received from the Director of Agriculture, Cape Town:—

In pursuance of my cablegram of May 20, 1905, relative to consignments of Australian apples for this colony, I am directed to invite your attention to the necessity of the fruit being free from diseases and insect pests, as it is anticipated that several thousand cases of Australian apples will be landed at our ports during the coming season. The common "Black Spot" of Australia (Fusicladium dendriticum) has been found on apples in South Africa, but is very limited in its distribution. It does not occur at all in our most important fruit-growing districts, and there is every reason to believe that if it got established it would cause considerable loss here during the rainy months. In consequence, our fruit-growers are very anxious lest new centres of infection should be established, and this Department apprehends danger from the exposal for sale of infected fruit in the shops. Another disease of Australian apples, and one which was found to be common on the fruit sent to this country last year, is "Fly Spot" (Leptothyrium pomi). This disease does not occur, as far as is known, anywhere in South Africa, and this Department is naturally very anxious that it should not be introduced. The Secretary for Agriculture feels that importers have been given quite enough warning, and that if consignments materially affected by these or other fungus diseases, or by codlin moth, arrive, he would be fully justified in ordering their confiscation or immediate shipment to some port outside South Africa. He would, however, request your Government to kindly warn shippers as was done a year ago, and thus minimize the risk of loss from our refusal to receive shipments. I may mention that it is expected that all consignments of apples sent to our ports from Canada hereafter will be examined by Government inspectors before their despatch, with the view of eliminating parcels which would not be acceptable here.



Cacti—Pilocereus Schotti.

Combating Insects.

In a lecture delivered by John H. Prost before the Gardeners and Florists' Union of Chicago, Illinois, dealing with the subject of "Entomology," he spoke in part as follows:—

In treating insects we divide them into two classes as respects their manner of taking food—the chewing and sucking insects. The biting, or chewing, insects are those which actually masticate and swallow their food, and include the majority of the injurious larvæ, beetles and locusts; and to combat these insects direct poisons, as the arsenicals, are used, which must be put on the food which these insects eat, so that it will be swallowed with the food.

The sucking insects are those which injure by gradual extraction of the juice from the bark, leaves, or fruit; these are the plant bug, plant lice, scale insects, thrips and mites. For this class it is necessary to use substances which will act externally on the bodies either as a caustic, or to smother or stifle them by closing the breathing pores, or fill the air about them with poisonous fumes. Insects probably troubled cultivators from the time plants were first grown, and from the beginning the cultivators used different materials to combat them. Some of these were vinegar, soap, soot, lime, turpentine, lech, hellebore, paints, oils, sulphur, ashes, sand, plaster, ground bones, whale oil, flax rubbish, dung, seaweed, mortar rubbish, clay, tobacco, water, powder, dust, and other materials too numerous to mention.

In recent years we have done away with all quack remedies, and I will mention those insecticides which are recognised by all horticulturists and will classify them according to the way in which they cause the death of insects:—

Internal Poisons, standard remedies—Scheele's Green, Paris Green, London Purple, Hellebore.

Commercial substitutes — Paragreen, Green Arsenoid, Pink Arsenoid, Laurel Green, Arsenate of Lead, Disparene.

Home-made remedies—Taft's Arsenate of Lime, Kedzie's Arsenite of Soda.

Contact Remedies, standard—Tobacco, Pyrethrum, Kerosene Emulsion, Whale Oil Soap, Lime, Sulphur and Salt, Lime and Sulphur, Hydrocyanic Acid Gas, Carbon Bi-sulphide, Limoid.

Commercial remedies—Slug Shot.

[illegible] uld not pass over this subject without saying something about some of our [illegible] common insect pests. The florists [illegible] know the red spider, which [illegible] a mite.—They [illegible] know the plant lice, mealy bug, and the different scale insects so common in greenhouses. All these may be controlled by diligent use of water and the nozzle. Tobacco is good in combating plant lice; the stems should be dampened and then burned in the houses. Kerosene Emulsion can be used on the more hardy plants in the getting rid of the scale insects, but must be employed carefully. Whale oil soap is good when the best quality of soap is obtainable. Hydrocyanic gas is sometimes used in the greenhouse when scale insects are extremely plentiful, but no one inexperienced can afford to use this insecticide, as it is a deadly poison. Sulphur is often used with good success.

Late Transplantings.

Try as they do to have all plantings done early, there are always some trees or shrubs to be moved late, and how best to do it and have them live is puzzling to the oldest planter. There are a few trees and shrubs which refuse to live transplanted late, but without naming them, it may be said in a general way that all are worth attempting.

When deciduous trees have formed leaves in Spring, plant them as we will, there will be a great check to them. But a customer often desires certain work done, and so long as the trees live, the purpose is answered. The way to proceed, and the only way, is to cut off very nearly all the young growth, but not quite all. Leave a few leaves at the extremity of the shoots without fail. Then follow the usual practice in good digging, keeping roots fresh, pruning and so on, and proceed with planting as usual until the hole is nearly filled up. Then pour in water, and continue flooding with water for two or three days, when the hole may be levelled off. There is every chance of such a tree living.

Evergreens require to be treated in much the same way. Pines with few exceptions should have their new growth cut quite off unless there can be had a good ball of roots and soil with them. There are exceptions in the case of the white pine section, in which are cembra, monticular and strobus These are more readily moved than any others, and I have seen them when their new growth has been three to four inches long moved with entire safety when planted as recommended, the new shoots standing out firmly in a day or two. The cembra, called Swiss stone pine, deserves more popularity, both for its merits as a handsome tree and because of the ease of transplanting it. There seems to be two types of it in cultivation, one making a good sized handsome tree, the other being of a dwarf growth, but something of what it does depends on soil and situation. But that it is one of the easiest of pines to transplant there can be no doubt.

The Spanish Codlin Moth Parasite.

The rather numerous magazine and newspaper articles which have intimated that the Codlin Moth parasite introduced into California from Spain had already increased to such an extent that last year's crop of apples was almost free from the pest are in a measure explained by a letter dated April 13, 1906, from Mr Edward M. Ehrhorn, first assistant to the State Commissioner of Horticulture of California. He writes:—"The Codling Moth parasite has been found in several of the districts where it was liberated last season, but on account of the scarcity of worms this last summer it has not increased as rapidly as was expected." Far from leading one to infer that the parasite was the cause of the apples being free of worms, Mr Ehrhorn tells us very plainly that the scarcity of worms is thought to have hindered the multiplication of the parasite. How very different. We hope that the parasite will show what it is worth during the present American fruit season, for if it is going to prove a good thing we want to get it into South Australia as speedily as possible. The pest was worse than ever this last season, and continues to spread.

The up to date dairyman, knowing himself to be part of the very foundation of this great industry of dairying, will not be found guilty of sending stale cream to the factory. He will at all times deliver his cream as clean and sweet as he used to bring his milk, and as often. The reputation of Australian butter is at stake, and all hands should make a determined effort not to let the quality deteriorate, as thereby thousands of pounds will be lost to the milk producer, and perhaps the business made unprofitable for the factory.

Unless a man has a love for fowls he never will make a success of them

Remember, a mild winter makes it better for the lice as well as the hens

Just as well raise all the stock your plant will carry, but do not over-crowd

New blood often saves the situation. Buy it from one of our advertisers, and get a square deal

Love lightens the labour and helps to fill the egg basket

A farmer without poultry is like a fowl without feathers

Get fixed on a good breed, then stick like glue

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at such prices that will secure your custom and give you every satisfaction.

Our Ordinary Prices as follows

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Men's Galatea Shirts	1s 11d	1s 9d
Men's Strong Working Trousers	3s 6d	2s 11d
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Men's Suits from 10s 6d

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Agriculture.

Green Manuring.

In the "Journal of the Board of Agriculture" attention is called to the custom of green manuring, which has rather fallen into disuse in recent years. On any kind of soil this has done good, and its effects in reclaiming some of the light sandy ground on the Continent have been marvellous. In recent years great improvement has taken place in the ideas on the same. Since the discovery of the nitrogen-fixing power of leguminous plants, only this class of crop has been grown, and beans, peas, vetches, lupines, sarradella, clovers, etc, are those now in use. On drifting sands the lupine has been used with beneficial effect to a large extent on the Continent, and the writer has seen it succeed in Ayrshire on a similar formation. As a general rule, however, vetches are one of the most convenient crops for the purpose, though a mixture of vetches, peas, and beans would suit equally well. Non-leguminous plants such as rape, mustard, hemp, etc, are now out of the running altogether, as they do not enrich the soil the same as the others at all. In the writer's neighbourhood red clover and crimson clover come in usefully in this way, even when cut for hay or grazed off, as there is always a lot of stuff to plough in afterwards. The object of this ploughing in of a crop is of course two-fold: to add to the humus or organic matter in the soil and to enrich it as well. It therefore tends to lighten up a heavy clay soil, and adds to the "staple" of a light sandy one. If the crop is allowed to grow up say a foot high, before ploughing in, and is not buried too deeply, then it is as good as a heavy dressing of dung per acre without the labor of carting and spreading, while it tends to clean the land at the same time.

An Interesting Question.

In reply to a question from Mr Hecker of Rhine Villa, the Editor of the Journal of Agriculture (S.A.) states—If a well-made super is kept in a dry place there would be little if any lowering in the percentage of soluble phosphate. Some of the water soluble phosphate would probably revert, but the loss of moisture by drying would balance this. There would of course be a loss in actual weight of manure. Two or three samples of last year's super taken this season by the Inspector of Fertilisers showed an actual increase in water soluble phosphates over the previous season's analyses, but the merchants found on weighing that they were a good many lbs short in actual weight of manure.

Maize Growing in Gippsland.

At Bairnsdale.

To my idea this is the pick of Gippsland. For about two miles in length and one in breadth you can see nothing but a mass of waving Indian corn, and the Mitchell River winding its way in and out on the northern side helps greatly to enchant the view. This narrow strip of land is well worth looking at, and is quite worthy of all the praise one can bestow upon it. Maize growing is the chief industry, although occasionally one may see an odd crop of barley or pumpkins. The land is of a very rich character, consisting chiefly of the washings from the river, which have been brought down by floods. These very often occur, and at times, when the crops are from 3 to 5 ft. high, they do an immense amount of damage. This part is more subject to floods, owing to the fact of the land being so level on one side, the high northern bank helping in a great measure to force the water over the more level country. The land commands a very high figure in the market, being sold at prices ranging from £40 to £60. It is admirably adapted for corn-growing, which is clearly seen owing to the splendid crops that are harvested every season. At the time of my visit they looked lovely, being from 5 to 8 ft high, and by the time they are fit to pick a great number of them will go as high as 12 ft. I was told by a resident that odd crops have been known to reach 14 ft. This may appear rather overdrawn, but judging from the height they were in January I think it quite possible that some of them would reach 13 ft. The crops for the last couple of seasons have been exceptionally good, and the present season they appear even better than last year. The average yield last harvest was from 80 to 90 bushels per acre, and considering the high prices of corn last season the farmers came out very well. In some instances as much as 22s 6d per bag was paid, thus clearly proving that the profits were very large, and from present indications they are likely to reap another good profit.

The maize are planted as soon as the last frosts are over, in October, and at the rate of about 10 lbs to the acre, and at a cost of sowing of something like 2s 6d per acre, and beyond keeping the crops clean by horse and hand hoeing, it is left to itself until ripe. The first picking generally commences about the middle of April, according to the season. Maize-pickers about this time commence to assemble on the river banks, pitching their tents in sheltered positions, within easy access of the water, with which, however, they have too close acquaintance. Hirings or engagements are usually entered into at the rate of 4d to 5d per bag; sometimes as high as 6d has been offered and refused, where the land was flooded and the crop lying in the mud and water I think there are no very big cheques to be made at the game. The days are short and the weather very changeable as a rule, and too many broken days increase the tucker bill. Nevertheless, when other work is slack, maize-picking is something to fall back on, and almost anyone can do it. So far the system adopted is that of picking into bags, which are gathered up by the waggoners and taken to the cribs, where the cobs are emptied out and left until shelled and bagged for shipment. All nationalities can be seen on the cornfields at this period of the year.

As soon as the paddocks are picked, then the horses, cattle, and pigs are turned in, and are invited to revel amongst the missed and fallen ears and the grass and weeds which, during the last couple of months, have been making luxuriant growth, untouched by the hoe. Where the pumpkins are also plentiful the pig's happiness is complete. Maize-growers are not altogether content with the net profits of maize-growing alone, but have hit upon the idea of buying and breeding store pigs, which they turn into their maize paddocks to fatten as soon as ever the cobs are ripe enough. The lean pigs assimilate corn and pumpkins which in their case are convertible terms for prospective lard and bacon, and when considered fit are driven away to the nearest railway station, whence they are trucked to the metropolis by rail.

Maize-growing is also carried on very extensively at Orbost, which is situated on the Snowy River. This country, like Lindenow, is also suitable for corn-growing. A few figures will demonstrate the capacity of the Orbost district. In 1901 there were 2,300 acres under maize, yielding somewhere about 184,000 bushels of shelled grain, an average of 80 bushels per acre. Out of this quantity about 10 cent, or say 18,400 bushels, were fed to something like 5,000 pigs, being a topping-off of 3 3-5ths bushels per head, and the balance, 165,000 bushels, were forwarded to the Melbourne grain stores. Out of the latter quantity about 8,000 bushels found their way to the Lakes Entrance by horse and bullock teams, and the remainder was either shipped to Melbourne direct or via Cunninghame, whenever the state of the Snowy River bar will allow of the egress of the necessary steamers. The freight to Melbourne amounts to about 25s. per ton, or 7½d per bushel. The bullock teams travel from Orbost to Cunninghame, a distance of about 34 miles, loaded with from 40 to 50 bags, while the horse teams carry from 20 to 25 bags. Each bag contains about 4½ bushels, which, at 56 lbs to the bushel, amounts to about 3 tons per load. The 50-bag loads weigh about 5 tons. The bush roads at certain times of the year are almost impassable, which makes the cartin much more difficult.

Pig fattening is carried on rather extensively in this district. When fat they are driven in mobs to Bairnsdale, where they are trucked to town. The journey to Bairnsdale takes about six days. The animals are shown the way by a waggon of maize driven in front of them, and when they are inclined to loiter on the track they are simply coaxed along by handfuls of maize thrown on the track. Thus they are kept moving during the day, and when night falls they are quite ready to stop and lie down till morning. When the market for pigs is buoyant pig fattening on the rich alluvial flats is very profitable; and there is a rush for store pigs to consume the maize; then, naturally, there is a pig boom, when farmers may, unless they are good buyers, pay more for store pigs than they can afterwards sell them for as fats. But experience during the past few years has taught them to be wise. The speculative spirit has steadied down to the dead level of common sense and security, and the farmers have learned that it is far better to be sure than sorry in dealing with the maize at the Snowy River. One striking characteristic which seems to appear to almost every visitor to the Orbost flat farms, no matter whether it is during the hottest day of summer or the coldest one in winter, is the fact that all animals appear to be sleek and in the best of health. Horses, pigs, and cattle, one and all, seem to be always in the very best of nick, and the reason of this, to a very great degree, I believe, is the constant feeding of Indian corn.

Mr T. S. Dymond (British dairy expert) speaking of dairy farming in Denmark, said that the success of Denmark which is not naturally fitted for dairy farming country, may be believed to be due primarily to the creation of peasant freeholders by legislation; secondarily, to the high degree of education both general and technical which they are given the opportunity of acquiring; and finally, to the system of co-operation by which the smallest farmers are able to secure the advantages of every scientific development.

The effect of bone dust on the growth of roses, carnations, and other flowers grown either in the open ground or under glass, is very rapid and remarkable.

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Growing Lucerne without Irrigation.

BY JAMES SLOANE, OF MULWALA.

At a time when all pastoralists are deeply interested in forming plans to grow and conserve fodder to tide them over long droughts, a few notes on growing lucerne without irrigation may interest your readers. Mulwala is situated sixty miles from Deniliquin in a dry district. The rainfall since 1896 has been scant and irregular. In 1902, only 962 points fell. We commenced lucerne-growing twenty-seven years ago, and have done so since, with varied results. In the past there have been many failures, and our plans of planting and using the crop have had to be altered. For the last six years we have sown a paddock each August, and it has always established itself. Even in 1902, when the wheat crop failed and we were unable to gather a sheaf of hay.

For the present, at least, the drought is over, and our lucerne paddocks have come through it in good heart, even though in some cases the Murray pines have died beside them. They have been a great assistance in keeping our sheep at home. Without them we could not have done this unless at a heavy cost for imported fodder.

We work our lucerne very simply, always trying to spare it when there is not sufficient moisture to enable it to grow more than a few leaves. In long spells of dry weather it dies if the shoots are constantly removed. For this reason rabbits are most destructive, and if once they get a footing nothing short of the destruction of all cover and burrows will save the lucerne.

Thorough cultivation is necessary. The land should, after ploughing, be harrowed twice to make a fine seed-bed, then after sowing brushed, harrowed, and rolled. Sand may not require so much harrowing. If heavy rain follows the sowing, there is no need for rolling, but if the season is dry, rolling seems to be imperative to press down the earth and keep what moisture there is in the soil. Our experience is different from those who advocate rolling after sowing without harrowing. One paddock here was tried that way, and much of the seed remained on the surface and even with rain it was not able to get sufficient covering for germination. The soil should be fairly porous, with a clay subsoil within a reasonable depth. If any water lodges on the surface it will kill the plants. Sandhills are not well suited, though the hollows between them where the sand is shallow often give fine returns.

Growers do not agree as to the amount of seed to sow to the acre. We prefer from 4 to 6 lbs. I have inspected a great many lucerne poddocks, and the thickness of the plants on the land gives but little indication of the quantity of seed that has been sown. Only a limited number of plants can be grown on a given area, and it is important to have vigorous roots. When too thick they adopt the policy of the survival of the fittest, when the moisture in the soil fails, and there is a danger of a general die-out. Lucerne draws much of its nourishment from the atmosphere, and it should never be deprived of all its leaves, which are its lungs. Young plants stand hardship and ill-usage better than old ones, and it is easier to kill out an old-established paddock than a new one. It is usual to stack stock on to the old paddocks and to spare the new ones. The opposite should be done. This is the chief reason so many people fail to establish lucerne and keep it. The plants continue to increase in size, and ultimately in this country get too big to draw enough moisture from their sorroundings. They then die. Unless it can be irrigated, it is seldom that a paddock lasts more than seven or eight years. Allowing old plants to grow to their fullest height in the spring hastens their end if not cut back before the leaves begin to dry. All energy is exhausted, and without heavy rain to cause a second growth, the majority of the plants die.

We have tried maize crops, and twice succeeded in establishing good paddocks in this way, but all our first year failures have come from the nurse smothering the child. This country seems too dry for growing two crops at once. The elder takes everything to itself when it ripens, leaving nothing for the younger to carry on with.

Indiscriminate stocking with all kinds of stock is a mistake. Horses soon worry a paddock out by cropping the crowns too closely and in other ways. No stock do better for themselves than horses. A very little lucerne keeps them, and they never suffer from hoven, so common in cattle. Lucerne that horses have regular access to seldom lasts past a second year. Sheep, especially crossbreds, if constantly on it, eat out the plants, leaving the native grasses, which soon get the upper hand. Cattle do not seem to injure it, even when left on constantly, but when a strong, rapid growth comes after heavy rain, more especially in the spring, there is a danger of hoven. Sheep also get hoven, but not to the same extent as cattle.

While it is important to the lucerne to keep it clear of other plants, it is not an advantage to the stock to have nothing but lucerne to eat. A patch of ordinary grass is a good thing in a paddock—none of it will be wasted. There may be grasses that would make a mixture with lucerne, but I have not seen them. For obvious reasons, it would be inadvisable to put a whole holding under lucerne. Not more than one-fifth of a holding should, as a rule, be planted. There are difficulties in the way of cutting and stacking lucerne from grazed paddocks, but they can be overcome. Keeping paddocks that are not irrigated for cutting only is out of the question.

All my experience has been without irrigation, though I have seen something of successes and failures with irrigated lucerne, mostly failures probably brought about by want of experience. However, I have grown other fodders by irrigation, and know that irrigated lucerne (the finest of all fodder crops) can only be grown in small patches, and that the grower must be prepared to employ, say, one man to every 10 or 12 acres. Also, he must have a substantial flowing stream beside him.

Our results even this year have been satisfactory. In the beginning of January we were bringing lucerne hay from the Hunter. By the end of the month we were cutting our own lucerne for hay, though our ordinary country remained bare of pasture. Since January it has been heavily stocked almost constantly.

Of course these notes give the result of local experience only, and I make no promise that they will apply elsewhere, but I believe there are many places where they will, where the good qualities of the "king of fodder plants" are not sufficiently appreciated.

The quantity of bonedust required to the acre is about twenty bushels. The best way of applying it to root crops is to drill it in with the seed.

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Bone Manure.

W. R. GILBERT, IN "THE FARMING WORLD."

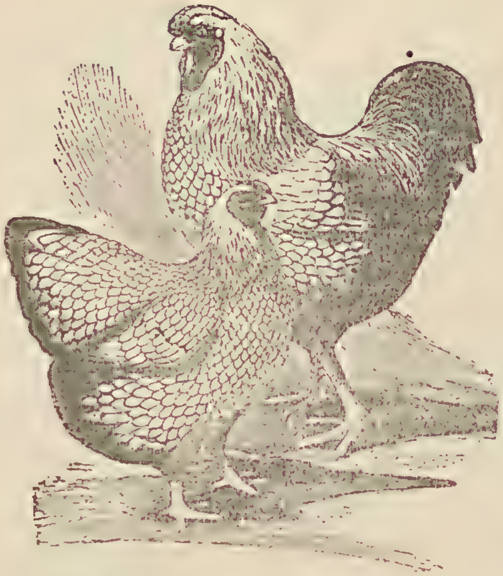
It is doubtful whether we pay as much attention to the use of bone as manure as the subject demands. German gardeners long ago used bone manure in their hot houses, but cultivators of other nationalities began to use them hesitatingly and cautiously. As soon, however, as their utility as a fertilising agent was assured, England, for one, imported large quantities of bones from Germany, and there was at one time a saying that one ton of German bone dust saved the importation of ten tons of German grain. As Malta covered her bare rocks with soil from lands, so England fertilizes her barren clays and sandy heaths with bones from Germany.

The principal element in the action of bones is phosphate of lime, which is indispensable to the growth of nearly all plants, but it is scarce in many soils and is speedily exhausted.

Analysis show that it is a constant ingredient in most plants; it is found in the pea pod, the bran, the Scotch pine, in rice, in the roots of the peony, and the water lily, and strange to say, in the pollen of the date palm; 39.3 per cent. in the ashes of the grains of oats, 44.5 in those of the grains of wheat, 46.5 in the ashes of bran, 32.5 in the seeds of barley.

These proportions show forcibly how indispensable the phosphate of lime is to the most useful of our farm crops, turnips, potatoes, and other culinary plants; clover and grasses are alike dependent upon it. Bones are most useful on porous soils, because their phosphates is slow of liberation, and can only be set free by the action of the air, hence it is more freely evolved in soil in which aeration is free, full and rapid. It remains perfectly fixed and stubborn in soils where it is locked up from atmospheric influences. This shows the necessity of having the land in perfectly friable condition before planting a root crop.

Another powerful consideration in the fertilising quality of bones is their extraordinary capacity of absorbing and retaining moisture; on arid soils this is of great consequence, especially upon crops which make their growth during the heat and drought of some summers. Bone manure is not only found to benefit the particular crop to which it is applied, but its influence extends through the whole course of crops and is noticeable for years. The writer knows of a field, one part of which was manured with farmyard manure and the other with bones, and the boned part was visibly superior fifteen years later; the fact that the bones' slow manner of freezing the phosphate, and the time it takes for them to entirely decompose, will account for the length of time bones may benefit the land.



THE POULTRY YARD.

The Muscovy Duck.

(BY HENRY LAWSON.)

The rooster is a brainless dude, although he sports a crest
The hen's an awful fool we know, though hen eggs are the best:
She'll flutter, cackling, anywhere save thro a gate or door,
And try to hatch a door-knob, too, for forty days or more.
The turkey is of no account, we'll let it go in peace,
And other fowls are ornaments, and geese are simply geese;
But over all that cackle, hiss or gobble, quack or cluck,
My favorite shall always be, the quaint Muscovy duck.

I'm fond of Mrs Muscovy, I think she knows the most
Of all the different kinds of fowls that poultry breeders boast.
She knows how best to build her nest when laying time is past,
And you should see the knowing pride with which she sets at last.
She waddles out for food and drink—she's not afraid of us,
And if we fix her now and then she doesn't make a fuss;
No frantic flaps of useless wings, no cackle, hiss nor cluck,
She's queen of all philosophers—the quaint Muscovy duck.

It is a wondrous thing to see, and a wondrous thing to tell,
Her ducklngs know as much as ducks the day they leave the shell.
That she is proud as proud can be, is plain to any dunce—
The little ducklings set to work to grow up ducks at once;
And, on a sunny winter's day 'tis a good thing for the eyes
To see her waddle round and watch her ducklings catching fies.
I love her for her waddle and her patience and her pluck,
Her wag of tail and nod of head—the quaint Muscovy duck.

Mate
Hatch
Advertise
Be patient
Go carefully
Be systematic
Have a good male
Females, too, by the way
Why won't you keep accounts ?
Don't let the lice get all the profits
Plan for a constant green stuff supply

SIMPLEX
Incubator.

D. Lanyon,
Rundle Street,
KENT TOWN, S.A.

The Successful Farmer.

I either shelter my tools or burn them. A thing not worth sheltering is not worth saving.

My waggon hasn't stood out four nights in ten years. I have harnessed my team for no other purpose than to draw the waggon into the barn.

My horses do lots of work, but are not banged up.

I stop them often when drawing a load up hill. Did you ever hear of a man taking a bag of oats and trotting up hill without stopping ?

Every one of my five horses is of my own raising and breaking. and not a baulky or heavy one among them.

In thirty years of farming I have lost but three horses, and those from old age.

A neighbor of mine wore out twenty-two horses in twenty-six years of farming. There's the difference.

Don't waste anything.

I don't let my buildings decay for want of paint and a man to put it on.

I don't let apples rot on the ground when the pigs should have them.

I am not afraid to invest a pound where it will save five.

I look out for my wife's strength as well as my own.

Keeping Records.

The progressive poultry breeder will probably never be satisfied with his fowls until he is able to keep some sort of a record of each hen and be able to watch each one closely, so as to be able to ascertain her worth as an egg producer. Some hens practically produce no eggs at all, but in the ordinary flock they mingle with the others and are all healthy, hence it is extremely difficult to distinguish them from the producers unless a close watch is kept. Such hens would look well in a pot-pie or a stew, but the owner is afraid to use the hatchet, lest by chance he might be slaying a good layer. Some hens that are good layers are very unattractive, as egg producing gets a fowl out of shape, and this results in her being killed for the table when she should be retained in the yard. Keep a record of the work done by the hens and you will be better satisfied and better fed.

A Profitable Occupation for Girls.

Farmers' daughters, or girls who live in the suburbs of a city, may engage in poultry raising with the assurance that they can derive more profit from it than from labor in any factory or other place in cities. They may thus employ their time advantageously while enjoying the protection and comforts of home. Well directed effort is essential in any vocation, and the same amount of energy expended on the rearing and care of fowls that would be required to earn a respectable living in town would bring money, health and contentment to many a girl on the farm who is now dissatisfied.

Rearing Chickens.

To many this is a very small subject and of too little importance to pay much attention to.

I find these are ones who sneer at you if you say there is money in fowls, and laugh at you if you speak of pure bred fowls, just as though there was any difference. One said to me not long since; " An egg is an egg, and a chicken is a chicken, and I don't see any use in making such a fuss about pure bred fowls."

I know this is a large subject, and room for all to practice and improve. To raise chickens successfully there are several things to be taken into consideration

First—I believe we ought to have the control of our breeding stock for several years back and be sure it is strong and healthy, well fed, well cared for, and of standard requirements. Here is a good beginning.

Now, if hatched by incubator and raised by brooder, be careful and not over-heat them, for this is sure death. I read not long since that a sunny disposition was required to raise chickens, and I believe it, for when you have to bury from one to six every morning in the 'sunny cemetery' you must have lots of grit or give up.

The great mortality of chicks raised in brooders is caused many times by crowding or trying to keep too many in a small space They are over-heated and lose strength, and no matter what you feed or how you care for them they will droop and die, and you will see Darwin's theory carried out, 'The survival of the fittest'—and sometimes there are not many fittest left.

Do not put over twenty-five together. Keep coop or brooder clean. Use lots of lime. Keep grit and fine sand on the floor.

For bowel trouble, put a few drops of carbolic acid in their drinking water. This is a sure cure.

There is no play-time during the chicken season. Clean ! Clean ! Watch for lice. Kill cats, and if it happens to be the neighbor's cat you will very likely have a quarrel with him, for he will think more of his cat than he does of your chickens

After they are feathered give them all the run possible and good wholesome grain, and you will feel that you are amply repaid for your hard work.

One of your neighbors will want to swap eggs with you. Another will want to borrow your pet rooster, just to try an experiment, and of course you will be rated selfish and stingy when you smilingly refuse these kindnesses. But push right along, and some fine day you will come out victorious.

Place the pullets to be kept by themselves, and feed for good frames and health ; also the cockerels alone, as they bother the pullets, and do not grow as well as when alone.

Those meant for breeding purposes should not be rushed but kept growing and allowed all the run possible, in order to make good, healthy strong stock before cold weather

Besides keeping my buildings and contents insured every hour. I use the greatest care in regard to fire. A stove-pipe or chimney that isn't right is immediately seen to. No old stove-pipe in the stable for me.

IF farmers only recognised the importance of keeping young stock growing, there would be fewer runts and misfits on the market, and more profit.

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Fattening Poultry.

A considerable part of the poultry that is marketed is poorly fattened, and consequently is tough and stringy, and so not agreeable to the palate; and after getting such poultry once or twice the buyer finds it is poor stuff, and possibly buys no more of it. The county of Sussex, England, is noted for its fattening industry. There the middle man plays an important part in the business; he travels about the country buying up all the lean or young chickens he can get, and sells them to the fatteners. Mr Piper, of Malden (Sussex), is one of the largest fatteners in England, and shifts during the season some 30 to 40 pairs fattened poultry a day. France is also another great poultry fattening country. There nearly every cottage has a few fowls to market. In Belgium there are a few persons who combine rearing with fattening. On a market day they are met by the fatters, and sometimes as many as ten thousand chickens change hands in a day. Here in Australia there is no such industry. The raiser does his own fattening (such as it is) and marketing.

Many will ask the reason of such low prices for poultry. Poultry that is properly fattened will always bring a good price, but the majority of the poultry marketed are poor, skinny, scraggy specimens, and bring about 1s 6d to 2s a pair; when nicely fattened birds will bring 5s and 6s per pair. The birds that are wanted to be fattened should be confined in a small yard. Do not keep them separate, as in most cases they fret and lose weight. The first essential in fattening is to give more food; this should be given regularly three times a day. The best fattening foods are ground oats, barley, maize, with the addition of a little fat or tallow, mixed into a crumbly dough, with skimmed milk. All feed should be given in the form of a mash, as it is easily digested. Grit should be given, also a little green food such as chopped lucerne, cabbage, rape, etc. Vary the diet as much as possible. After each meal remove the troughs, as the constant sight of food when they are not hungry turns them against eating. In England, the fatteners do not feed much maize meal as it makes the flesh very yellow. One English writer, in speaking of the food to be used, says:—"I would caution my readers against the free use of maize meal or Indian corn; this contains a large percentage of yellow oil, and when supplied to the fowls in excess it accumulates under the skin, giving the birds the appearance of being yellow-fleshed—a thing that detracts from their value."

In England and on the Continent cramming machines are largely used. It takes about three to four weeks to fatten properly. Another good mash to feed is as follows:—Pollard, ground barley, equal parts, and potatoes (boiled), mixed with skimmed milk and a little mutton fat, also pinch of salt. If the birds are fed on the above foods the farmer or poultry man should have no difficulty in disposing of his produce at a satisfactory figure.

Do Incubators Pay?

BY F. C. ELFORD.

There is considerable being said about incubators these days. People are wondering if it will pay them to buy one, and if so what should be the capacity, make, etc. If they do invest will they be able to run it? And will the incubator chicks be as healthy and as thrifty as the hen-hatched?

Some of these questions can be answered satisfactorily; others are not so easy to settle, but they all show that interest is being awakened or increased in this promising industry. A good deal depends upon our intentions and conditions, as to whether it will pay to buy an incubator. Some people have had very good success in utilising the old hen as an incubator, and probably after she has gone through the operation for several years she becomes an expert, though I think the incubator does more efficient work than the average hen, and for my own part if I were going to raise fifty chicks I would have a small machine. I would rather look after a fifty-egg machine than oversee two or three setting hens. I have tried both, and I invariably lose more eggs and patience with the latter than I do with the former. If, however, chicks into the hundred are wanted, I would not hesitate a minute in saying that an incubator would pay.

In purchasing a machine I would not do so simply on the recommendation of the manufacturers. If possible I would see someone who had run the machine, or at least someone whose practical judgment was reliable. Do not buy a cheap machine because it is cheap. It will probably make you feel cheap yourself. Get a good, reliable make. A few pounds in the first cost will be more than made up in the results. Though an incubator is not a plaything and should not be left to children to handle, still any competent person can manage it. One of the first things is to learn to follow the directions. Some people imagine they can improve on the directions sent with the machine, but in all probability the firm that makes the machine knows more about it than the purchaser.

Do not expect an incubator to bring live healthy chicks out of infertile eggs or eggs that have been chilled; but if you put fresh, fertile eggs in and follow closely the directions, you may expect probably from 70 to 90 per cent. of the fertile eggs to hatch. These chicks, to say the least, will not inherit any disease or vermin from the mother, but with proper care and breeding will do as well as any hen-hatched chickens could do.

Be sure you have eggs from good stock for your purpose; feed and finger the fowl if possible; never put an inferior article on the market; and you will not have any difficulty in selling at remunerative prices.

According to the "Druggists' Circular" strips of woollen cloth have been dyed a variety of fast colors by boiling in solutions of the commercial jams and jellies which are chemically colored for the stomachs of the unsuspecting public. Food adulteration is apparently being carried on to an alarming extent.

S.A. Farm and Estate Agency.

Near Burra, 5,700 acres, S P. Fences, House, Wells, etc. : 20s. Good sheep country.

Myponga, 1,316 acres, C. Lease : cheap, £320

Rhine Villa, 605 acres, R.P. Lease. Stone House, Well, Garden, Fallow, Fenced ; 35s

Several fine River Properties near Mannum.

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Narracoorte, 830 acres, House, Creek, Nettes, Fence, splendid Land ; £3 acre, with 990 acres C. Lease. £1200, may remain 9 years

434 acres, Clinton, Y.P., 23 bushel average. House, Fenced, Water, etc. : only 80s, terms

Edithburgh, Y.P., 317a (90 acres Salt Lake, return over £100 yearly, £1200

Cherry Gardens, 160a freehold, 87a P lease, 3 rooms, 300 fruit trees, good gardening land ; plenty surface water, 60s acre for freehold

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Magill, 11 acres, Pig, Poultry Farm, £1,000

Port Lincoln district. Koppio, 1900a, well fenced, stone house 5r, outbuildings, surface springs, 20 in rainfall, reaped up to 27 bushels, quantity cleared, balance gum and sheoak, fine grazing. £600 due to Crown. 27s 6d acre, goodwill

Bowhill, 4450a, 220 crop, all stock and implements, £800 the lot, exceptional bargain, £600 the lot

Glen Roy, 2575a, RP lease, with about 400 wethers given in, 5s acre, goodwill

Narracoorte, 316a, house, orchard, very choice property, £5 10s acre, £1000 stands at 4½

PASPALUM SEED—We are booking orders for best Tweed River Seed, 25 lbs or more, at 1s 3d, Adelaide.

Hahndorf, 50 R., Sell or Let ; nice place
Islington, Choice Dairy Farm ; £2,300.
New list of N.S.W. Farms just received.
Money to Lend from 4 per cent.

Easy terms arranged.

Pirie Chambers, Pirie-street.

Good Axle Grease—A good as well as cheap axle grease can be made as follows: Mix one pound of black lead with four pounds of lard. Have the lead very fine and free from lumps of grit. Mix with the lard, then heat until melted and stir until cold. A little melted tallow or wax may be added to the hot mixture to make it stiffer when cold.

The Dairy.

Air Treatment of Milk Fever.

Let me give you my experience in one case, which will be sufficient. I was called late one evening to attend a cow that was down, unable to raise her head. I gave her the air treatment, and the next morning word came over the 'phone that she looked as if nothing had ever been wrong. The next evening I received word that she was down again, the same as before. She was treated again, and she got up as before, but the following day we had the same experience, and at each visit the owner was talking about the large flow of milk he was getting. It now came to me that his taking such a large amount of milk at one time was where the trouble lay, so he was ordered not to milk her clean out again for some days, but simply to do as nature suggested, and that was, to take a small amount from each teat, and that frequently, according to the flow, say from four to six or eight times a day. There was no more trouble in the above case, and I have given the above orders to owners many times since, and never have I been called to see a like case or known of a fine cow having milk fever when the above directions were followed.

I would also suggest that the owner of a heavy milker shrink his cow before she calves; take away the rich food for a few days and put her in a dry lot. It will tend to prevent her udder from becoming so distended, and perhaps inflamed. Begin taking small quantities from each teat as soon as the udder becomes well filled, no matter if it is several days before she calves; it will do no harm either to the mother or offspring.—J.V., in "Wallace's Farmer."

Rules for Cream Suppliers.

Professor H. H. Dean, of the Ontario Agricultural College, Canada, has issued a short set of rules for the guidance of dairy farmers who supply cream to butter factories. Here is what he says:—

The chief difficulty in the way of success in all factories where the cream is delivered instead of the milk is that of getting the cream delivered in a sweet, clean flavored condition. Farmers who deliver milk know that it must be delivered sweet daily in order to have it in a condition fit to make fine butter. On the other hand, cream will remain sweet for a longer time than milk, and most persons considers that it does no harm if the cream sours.

In order to get sweet cream for factories the two main requisites are to keep everything clean and to keep the cream as cold as possihle until it is delivered at the factory.

The first requisite should be easy, but many persons fail here for the same reason that an old bachelor failed in getting good results in his cooking by following recipes in cook books. When some-one asked him if he had ever tried any of the recipes for cooking, he said he had tried a good many of them, but never had good results. When asked why, he said they all began in the same way, "take a clean dish," and he couldn't do that very handily, consequently he gave up referring to cook books. The second requisite is got by having on hand a supply of cold water. Every dairy farmer ought to have a supply of cold water for cooling cream.

The subject may be summarised in the following:—

1. Clean the pails, cans and separator daily or twice daily.

2. Cool cream to 50 deg. F. if possible by the use of cold water.

3. Have rich cream testing not less than 25 to 35 per cent. fat.

4. Fresh cream should not be added to older cream until after it is well cooled

5. Deliver daily or at least four times a week in warm weather. The cream cans or tanks should be protected from sun, rain and dust while on the waggons.

6. Proper weighing, measuring and sampling are essential for satisfaction among the suppliers.

7. Cream should be pasteurised and cooled at the factory, especially in the autumn and winter, to remove objectionable flavors and to add keeping quality to the butter.

8. Co-operation on the part of the drivers, suppliers and factory managers is necessary in order to improve the quality of the cream and butter.

Inferior Dairy Tinware.

There is an immense amount of tinware used in dairies and butter factories, but the best quality is seldom found in dairies. In the factories the very best is demanded by the butter and cheese makers, not only as to quality, but to conform in shape and dimensions to whatever the factories wish. Manufacturers are glad to cater for their requirements. Were this not so there never would have been the great improvements made in factory apparatus, most of which have been brought about by their practicability as they suggested themselves to the thoughtful factory managers.

The tin vessels used in the ordinary dairies of this country seldom last more than a season, owing to the poor quality of the cheap article, whilst in England, where tin is produced, they seem to last for ever. In this country the tin from which the cheap cans are made rusts into small pinholes in a short time. The best quality of tinware is found in large supply houses; they invariably secure the best quality, and where dairymen have this quality and milkers are careful, their milk pails, strainers and cans will last for years. The heavy milk pails are too thinly veneered with very bad tin; instead of which they should be light in weight and heavily tinned with best tin. Dairymen should demand light, handy, serviceable ware with the best quality of tin. Until such demand is made they must suffer by an inferior grade of tinware, which adds to the expense of dairying.

Prevention of Tuberculosis.

Tuberculosis never originates spontaneously or from bad conditions of life alone. It can be produced only by the specific germ of the disease. We can protect our pigs by preventing the access of these germs. From what source do they come? Feeding of offal may cause tuberculosis. The small slaughter-house in the village or country, with its herd of scavenger pigs, has much to do with the propagation of this disease. But this is not the chief cause of the trouble.

All experience teaches that the most important factor in the production of swine tuberculosis is the milk of tuberculous cows. That tuberculosis of pigs may readily be caused by feeding the milk of tubercular cows has been absolutely demonstrated by numerous carefully controlled experiments. Observation made on a large scale in the United States, in districts where there are infected herds, and where much skim milk is fed to pigs, also furnishes convincing proof of this fact.

But perhaps an even more perfect demonstration is supplied by the experience of Denmark and parts of Germany. Tuberculosis of swine was frequently common. In the same districts, it is now extinct, or quite rare, while all conditions remain the same and no repressive measures have been put in force excepting that it is now required by law that slime from the separator bowls shall be burned and that the skim milk be boiled to destroy tubercle bacilli.

Protection comes through the use of the farm separator, through the pasteurisation of skim milk at the butter factories, or, best of all, through the eradication of tuberculosis of cattle.

Jack Paine,
Hairdresser and Tobacconist
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The Australian Gardener

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Flower Garden.

By The Observer.

Garden Pests.

The favorable season this year has caused vigorous growth of all our plants, including weeds. The weeds must be pulled up, else they will choke the plants we want for flowering. Slugs, snails, and other pests must also be destroyed. The slugs and snails should be dusted at night with new lime which has just recently been slacked.

Caterpillars may be picked off by hand ; or, if very numerous, they can be poisoned with a spray of arsenate of lime.

Aphides and many other pests can be killed by spraying with tobacco and soap decoction, four ounces of each boiled in each gallon of water. Where only a few plants are to be dealt with a basin of the decoction may be taken in the left hand, and the right can be used for bending the ends of the branches affected down into the liquid. The aphides always attack the sappy new growth.

Shrubs.

Plant all kinds of deciduous and hardy evergreens. At the end of the month danger from frost at night will not be serious, and some orange, lemon and similar trees may be planted ; but there will probably be better results if this work is delayed a little. Among many desirable plants for moderately sized gardens are jacaranda mimosiaefolia, sparmannia africana, spiraea corymbost, philadelphus, the double flowering cherry, gooseberry, currant, cherry, peach and pomegranate ; ornamental eucalypts, hakeas, and very many others

Foliage Plants.

For foliage effects there are a good many plants which rival flowers for variety of vivid colors of every hue, such as the variegated beets and kales, eunonymus, holly, echeverias, several centaureas, cannas, vinca, amarants, coleus, iresene, etc., to say nothing about the many plants which so brilliantly glow at the end of autumn. Seeds of the tender varieties of these can now be sown under shelter against frost, and plants of the hardy kinds should be put out at once.

Bold - foliaged and eccentric-looking plants are also attractive in large gardens, such as melianthus ricinus, maranta, cordyiine, hardy aralias, palms, strelitzia, bambusa, musa, wigandia, and others, of most of which there are more than variety.

Among the cucurbitaceae there are a good many species which produce good flowers and remarkable fruits of various brilliant and vivid colors. These include abroba viridiflora, byranopsis erithocarpa, coucansa, indica, and a lot of gourds and calabashes, both useful and ornamental. Seeds of these can be secured now for sowing at end of this month.

Most of the above can be trained over walls, fences, banks or on trellises to hide anything objectionable.

Plants now in Bloom.

There are considerably over a hundred kinds of plants now blooming in the Botanic Gardens, and it will well repay the amateur gardener to visit that beauty spot with book and pencil to take notes for present use, as there is a dearth of flowers in most of the private gardens.

Bulbs.

All bulbs remaining over should be put in, but liliums, tigridias, tuberoses, and similar bulbs should have a protection of litter over the spot where planted.

Plants to Take Up and Divide.

Take up, divide, and replant in fresh spots any liliums, diplacus, antirrhinums, penstemons, plumbago, chrysanthemums, salvias, tuberoses, and other plants of a similar nature or habit of growth which have been left undisturbed for three years or more.

Seeds.

Under shelter sow small lots of seeds of half-hardy and tender annuals, including balsams, browallias, amorants, comphrenas, celosias, portulaccas, French and African marigolds, capsicums chillies, and other peppers, and euphorbia variegata.

Climbing Plants.

The best, perhaps, are pillar and climbing roses, but bougainvilleas, clematises, passifloras, tacsonias, tecomas doliches varieties (one of which produces edible-podded peans continuously), maurandia, some of the euphorbias, gourds, and other climbers are available, and will make an attractive screen.

Manures.

Liquid manure is very stimulating to all strong-growing plants, but should be supplied in drills at a little distance from the stems. When supplied, fill in the drill lightly. New stable manure or any other decaying organic substance may be placed in a tank, kept covered with water, and the liquid applied two or three times a week. Old, well-decayed farmyard stuff can be spread at any time over the surface, and the fertilising matter will be dissolved and carried down when the water is applied. A small quantity of sulphate of ammonia, nitrate of potash, and superphosphate added to the water in the tank will increase its value, but do not be too liberal with these chemicals, else they will kill the plants. A pint of sulphate and a quart of each of the others is sufficient for 20 gallons of liquid, but any quantity of stable manure, in reason, may be put into the tank, provided it is dipped from freely every day and kept filled at the same time. A 30-gallon tank will serve for a fortnight in a small garden.

Annuals.

Annual chrysanthemums, poppies, centaurea suaveloens, martnia fragrans, bartonea aurea, and a few other rank-growing but handsome plants can be sown in the open beds, because the snails and slugs do not attack them; but it is best to grow everything in nursery beds, where the young plants can be easily attended to.

Pampas Grass.

Cut pampas grass close down, so that it may make stronger growth with the approaching warm weather. Some fertiliser is good for this grass. The plumes should be cut directly they open, and be hung up by the stem in a shady place until dry. This will prevent them falling to pieces and making a litter in the room.

Edging and Hedges.

Trim edgings of thrift, box, etc., and fill up gaps in the line by pegging down shoots from the nearest adjacent plants, because new plants cannot live where another of the same kind has recently died. Deciduous plants, if necessary, should be pruned now, and any evergreens also if not too large or straggling. Hedges will be stronger and denser if the plants are interlaced as they grow. This causes lateral growths and fills up the bottom, so that pigs, dogs, cats, and boys cannot crawl through without cutting their way. If any large branches are cut from a plant cover the wound with grafting wax, or else white lead paint, and sprinkle with fine sand over the paint.

Pruning.

The rule with regard to pruning of any plant is to do the work when the growth has ripened or hardened. Very young growth may be rubbed out without injury, but when the sap is rising freely it may result in bleeding if the branches are cut.

Dry Soil.

Where the soil is allowed to become too dry during hot weather there is a possibility that the trees and plants may become scorched during the afternoon of a very hot day, owing to deficient flow of sap. In neglected orchards and flower gardens it is not uncommon to find all the fruit trees, standard roses, and other plants completely dead and dry on the western side. To prevent this disaster in the amateur's garden it is necessary to keep the surface soil pulverised to a depth of two or three inches, or to mulch, or to supply water freely and frequently. Roses should have enough foliage to protect the stems against the afternoon sun, or have a board or other shelter to the stems on the western side. It is best to dispense with standards and half-standards and grow roses naturally upon their own roots, except where it is desired to grow flowers for show purposes.

Lawns.

Lawns made with rye grass, Poa pratensis, lawn mixture, clover, or other grasses for winter effects should be rolled with a heavy roller to press in the stones, then crowned with the scythe and finished off with the lawn mower. Water with 1 oz. of sulphate of ammonia, 2 oz. nitrate of potash, and 3 oz. superphosphate to 6 gallons of water. Break up bare places in buffalo and couch lawns, supply plenty of old stable or other manure, make level surface, and at end of month plant roots of either grass.

Greenhouse.

Give plenty of light, without direct rays from the sun, through glass upon the plants, and admit air freely when not too rough and cold. It is a good plan for amateurs, who cannot be in constant attention to the shading with blinds, to cover the underside of the glass with whitening mixed with sugar water, and dashed on with a sponge. Syringe overhead, and do not omit to give water also at the roots. Do this about midday, and use sun-warmed rain water if possible.

Soft-wooded plants make most of their growth prior to flowering, but hard-wooded kinds start new growth after flowering. Any repotting should be done whilst the plants are dormant (or when the wood is ripe). The water supply should be regulated accordingly—more whilst the plants are making new growth than when the growth is slow.

Hard-wooded plants must not be supplied with fertilizers stronger than a little peat or humus, but soft-wooded plants, whilst growing quickly, may have some weak liquid manure twice or three times a week. Never make the soil sloppy or saturated, but maintain a moderately moist condition. If too much water is supplied it drives out the air, and the roots are killed.

Select the very best of Primula chinensis for seedbearing, and place a mark so that the seed may be collected when ripe. There is nothing to be gained by nursing old plants for next season, because young ones can be raised more easily.

Pot up cinerarias into the next larger sizes directly the roots reach the sides of the pots, and use rich, sandy loam. Give each plant plenty of space, for, if crowded, they will be weak.

Fuchsias and pelargoniums intended to flower late should be pinched off at the end of the shoots. This will cause lateral growths. Fuchsias will take a good deal of water, but should not be stood in saucers, and they should have some weak liquid manure twice a week.

Caterpillars, scales, thrips, and aphides will probably be found on the plants. If these are attacked at once there will be much less trouble with them later on, as they multiply with frightful rapidity.

Four ounces each of waste tobacco and soap boiled a few minutes in each gallon of water will prove an effectual spray for most of the pests, but the scale insects need a dose of resin wash.

Support hyacinths and other weak-stemmed flowers with a wire round the stem and the other end in the soil. Pot up coleous plants and place them in a good light and warm place. If fumigation of the house is necessary, remove cinerarias and dust them separately with insect powder, else the tobacco smoke will help them.

Repot hydrangeas into rich, light soil with plenty of drainage below. Pot up petunias and strike cuttings.

The Shadehouse.

Take down the climbers from the roof and thin them well to let in the light.

All plants about to blossom should be taken into the greenhouse, where they should have plenty of room for light and air.

Daphne indica and many other hardy plants will thrive in the beds of the shadehouse, while the outside conditions will be too many for them.

Cuttings of show pelargoniums may be grown well in this place.

The Stovehouse.

Maintain an equal temperature, about 70 to 75 deg F. Give fresh air whenever outside conditions are mild, and from over the boiler when cold rough weather prevails.

Pot up begonias, caladiums, gesneras, gloxinias, dipladenias, Cissus discolour, and similar plants, using fibrous loam with equal parts of leaf mould or peat.

Pits and Frames

One frame should be dung-heated and another might be used for growing mushrooms.

The other pit should be kept filled with seedlings of all kinds of tender annuals and cuttings of all sorts.

The Fernery

Towards the end of the month repot everything, and shake off as much of the old soil as appears to be safe.

Use best peat for the finest ferns, and a mixture of peat, leaf mould, and coarse sand for the others.

Except with the large ferns it is best to pot into the smaller sizes and pot into larger sizes when growth has been made. For some time after repotting the ferns will not require very much water, and should be kept close except when the weather is fine and warm. Of course none but the hardy ferns will be in the house at this time, the rest being in the stovehouse.

Sow spores of ferns on a soil made up with pulverised peat, leaf mould and sand, made smooth. Scatter the spores on the surface and cover with a sheet of glass, which must be lifted when the young plants begin to appear, when they must be removed to a shady place.

Look out for snails, slugs, and other pests. Remove dead vegetation. Make hanging baskets and fill them with suitable ferns or some of the asparagus species.

Fix elkshorn and staghorn ferns upon blocks of virgin cork, and hang them on the walls.

DIGGING

is a more important operation than is usually considered. It should be not only the turning down and covering of weeds for neatness sake, but an even thorough soaking of the soil, even distribution of manures and soils to improve the general staple if possible, and to break any hard layers that may have been formed during summer by the shallower operations of hoeing, and which are likely to prevent access of air and water to all parts of the beds.

In digging among plants great care should be taken to avoid damaging the roots Weeds growing near plants should be skimmed off and dug deeply into the beds outside the root radius.

The operator should have a narrow trench in front to the full depth of the digging, into which manure, weeds, and small prunings, etc., can be easily turned. An even, but not smooth surface should be aimed at.

CARNATIONS

will require attention in striking, tying and thinning. Where the plants are encircled with mesh wire, thinning only is necessary. The tree varieties develop many side growths, all of which, if allowed to remain, would unduly crowd the plants and tend to the production of inferior blooms Inside shoots should generally be removed when thinning. Cuttings made from such shoots, planted firmly in sandy soil, are likely to strike, and will grow into good plants for next season.

Soot, if worked into the soil around the plants, will greatly aid the flowering and assist in keeping the plants healthy and free from slugs, etc.

DAHLIA TUBERS

may be lifted and stored in a dry shed during winter. If the ground is of a nature that holds moisture, it is safer to lift them now than in spring. The preparation of the beds for next season's planting can also be proceeded with. If available, new ground should be selected, but if not, new soil and manure should be well worked into the beds before the dry weather begins.

Propagating Dahlias

I have heard several complaints this season about the tubers of last year's new varieties failing to break, and I have examined some tubers which have been well developed and quite plump, with new roots starting, but no symptoms of starting into growth. It has been stated that the fault is caused by the plants being propagated from tops instead of cuttings taken off close to the tubers.

It is rather a difficult matter to explain. I do not think that there is any grower who would wilfully send plants out to trade growers that he knew would be of no use for stock the following season, and I may get into trouble if I say it is the fault of the propagators.

I have had some considerable experience among dahlias, and have found that under the most ordinary circumstances some tubers may fail to start in Spring, especially those that are struck late in the season.

Yet, on the other hand, I have taken the tops off new varieties received in May, rooted them, and they made useful plants for stock the following season.

It may be unnecessary to say that when taking the tops for cuttings they must be cut off quite close below a pair of leaves: but this is one point, and the most important is that the lateral shoots which show at the base of the leaves must not be cut off. I have made a practise of putting these cuttings in without removing the basal leaves, putting them into the soil only just deep enough to keep them firm, or sometimes it may have been necessary to use a stick to hold the cuttings in position.

When it was first suggested to me to propagate from the tops of young plants, I certainly thought that if they did root they would be of no use as stock plants for next season; yet experience proved that they were. It may not be in all instances that failures are caused from the lateral shoots at the base having been removed when making cuttings, but this is one sure cause, and with young and inexperienced propagators this may be done without any idea of the mischief they are doing.

I would recommend anyone interested to try a few tops this season, for the purpose of proving my remarks. Put some cuttings in without removing the leaves and side laterals at the base, and others in the orthodox way of taking the lower leaves off, taking the side shoots with them.

I have extended this note, but it is a most important matter. One grower tells me that after buying last year's novelties and cataloguing them, he has had to buy all his plants of several sorts to execute orders. — Metropolitan in Horticultural Advertiser.

The Bouvardia.

(By J. Cronin).

The bouvardia is a dwarf, shrubby, perennial plant specially suitable for planting in small gardens. The original species are natives of Mexico, and have been grown as greenhouse plants in England for more than a century, one species triphylla—still to be found in our gardens—flowering for the first time in 1794. The types are rarely grown now, having been superseded by varieties raised by hybridists that are superior in every way. The flowers are larger, the habit of growth larger and sturdier, and the colors much more varied.

In Australia the bouvardia is practically a hardy plant, thriving well under the ordinary conditions that govern border cultivation. The plants are in some districts denuded of their foliage and the growths cut back by frost, but under fair conditions invariably break away into growth again in the following spring. For effect in the garden during autumn and early winter there are few shrubs more valuable than the bouvardia, the neat little bushes producing quantities of showy flowers for a long time. The flowers are valuable for table and other room decoration, the colors of the best varieties being bright and distinct; some varieties are very fragrant; and the whole class is specially valued by florists on account of the suitability ot the blooms for bouquets and sprays for personal adornment. Bouvardias are propagated from cuttings of the young shoots taken from plants forced into early growth in hot-houses. They require bottom heat to insure any certainty of the cuttings rooting. Cuttings of the roots will also produce plants, and a gardener without conveniences such as hot-houses or hot-bed frames would be more successful in such mode of propagation Plants can be purchased cheaply from nurserymen, and in the winter could be sent in safety by post to a long distance. Any fair garden soil will suit bouvardias, that of a rather retentive nature being most suitable. In very light sandy soils, some loam or clay should be added for these plants. They will eventually grow into bushes about 4 ft. in height and 2 ft. in diameter, except in the case of Humboldtii corimbyflora, which is of larger and looser growth. Where the plants are required specially for supplying cut flowers, they may be planted in narrow beds and protected from frosts by a shading of hessian or other material. In providing soil for the reception of bouvardias only well-decayed manure should be used, the addition of a little bonedust and fairly deep working being advisable, as under fair conditions the plants may last and give good results for possibly twenty years. Early spring is the best time to plant; if late frosts are usually experienced, plant later or shelter against frost temporarily.

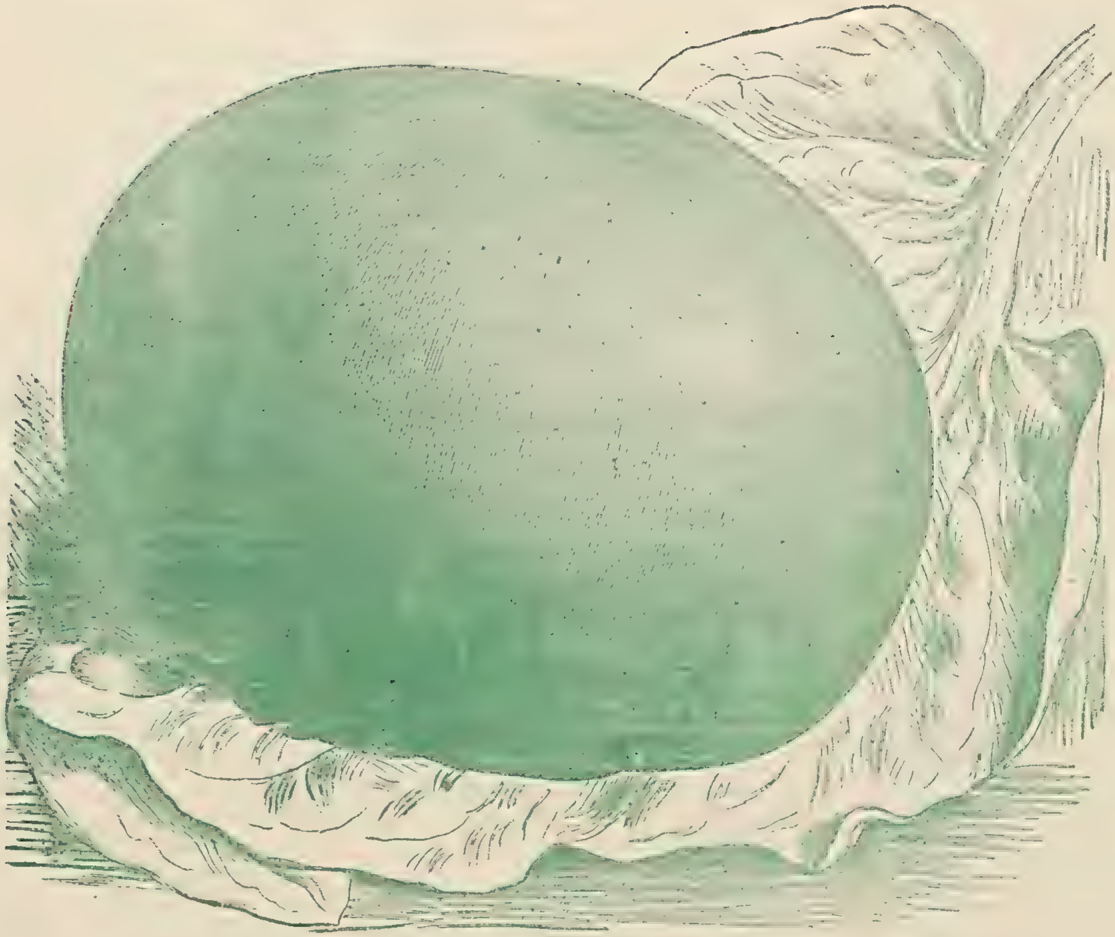
The plants should be pruned fairly closely each year. If unsightly, some of the frost-affected growths may be removed in winter, but it is not wise to cut back to living wood until spring. Thinning out growths is important, or the plants will become tall and crowded.

Insect enemies of the bouvardia are brown scale, aphis, and mealy bug. Spraying with a strong solution of soft-soap and tobacco is the safest and most effective means of combating these pests. Working soot into the soil around the plants will deter the mealy bug and stimulate the growth.

There is always plenty of work to do in the garden. That is what it is meant for. Ask Adam, he began it. If there is plenty of work one has always the satisfaction of knowing that there is plenty to show for it. Equally, on the other hand, the less one does the less there is to show for it, except in the matter of weeds.

Clear liquid manure, given once or twice a week, is of great assistance to Camellias that are swelling their buds.

Cleanliness is one of the first considerations in a well appointed garden.



TOMATO.

"Scarlet Mikado" Tomato. Kindly lent by E. and W. Hackett,

Seedsmen and Nurserymen, Rundle Street, Adelaide.

In the list of economic horticultural products the Tomato holds an almost unique position. Every year Tomatoes are becoming more used for cooking, and is one of the best of salads. The fruit is also used for canning, for sauce and other preserves, for all of which there is a very large demand.

The seed may be sown this month in rich moist soil, and when the plants are about 3 ins. high they should be transplanted in rows 3 ft. apart each way, but do not give them much water. It is a good plan to put a stake to each plant, for then they will fruit better. The soil best suited to the Tomato is a rich sandy loam, with a clay subsoil, and Peruvian guano is one of the best fertilisers. Ordinary stable manure is not sufficient, as it does not contain potash, a very necessary ingredient where fruit is the desideratum.

When the flowers appear give very little water, so that the fruits may set well, otherwise the flowers will drop off. Cut off shoots that do not bear flowers, so as to throw the strength into the young fruit. In growing early Tomatoes it is necessary to cover up the plants at night. Care should be taken in handling the fruit not to bruise it, or it will decay rapidly. In packing for market the fruit should be graded according to size and ripeness, all in each package being as nearly alike as possible.

As regards the best varieties to grow, there are so many excellent ones, that we have only space to mention some of the leading kinds:—Acme (a well-known favorite), Early Ruby, Early Jewel, Earliana, Trophy, Mikado (purple), Ponderosa, Matchless, Crimson Cushion, Volunteer, Burwood Prize, President Garfield, Alice Roosevelt, Large Red.

The Scarlet Mikado, of which we give an illustration above, is an excellent variety, possessing all the good qualities of the well-known "Mikado" Tomato, and in addition it is eight to ten days earlier. Its enormous smooth fruits are a brilliant scarlet. The flesh is thick and contains very few seeds, a very desirable feature in Tomatoes.

The Orchard.

Cultivation of the Peach.

By Mr. A. J. Bray.

There are few varieties of fruits adapted to such varied conditions as the peach The apple is essentially a product of the hills districts. The orange is only adapted for limited areas, generally rich alluvial flats, well sheltered. The almond can only be cultivated successfully within a limited distance of the seacoast, but the peach thrives both in hills and plains, on the sandhills as well as river flats, and there are few localities where it cannot be grown with a fair measure of success. Of late years there has been a great extension of the season in which peaches can be produced. Formerly, the season was a brief one, but now it extends for fully four mounths, and peaches are in season continuously from the beginning of December until the middle of April. The best stock for the peach-tree is the peach. The apricot stock has been tried, with the idea of its being more resistant of the aphis, but the trees did not thrive. The almond stock produces a vigorous tree, but they have a tendency to gum badly. The idea that such trees are white-ant resistant is a fallacious one Our experience in the floods of 1889 was that peach-trees worked on almond stocks were some of the first trees in the garden to succumb to the effects of the excessive moisture. Peach on peach stock gives the best results. In selecting trees for planting avoid those of large size. Such usually receive a check in transplanting, and lag behind trees of less size. Trees of medium size, first year from the bud, are the best to plant. Never purchase fruit-trees of any variety at an auction sale Such are usually culls, very often untrue to names, and unreliable. Purchase only from a well-known nurseryman. The soil should be cultivated deeply before planting, but the old-fashioned method of sinking deep holes is not to be recommended A hole sufficient to spread out the roots is all that is necessary. If the ground is of a heavy nature, the undersoil might be loosened with a pick. The great mistake of amateur fruit-growers is that of planting too deeply. The tree should not be planted deeper than it formerly grew in the nursery-bed. There is no tree which requires more careful pruning than the peach. Peach-trees differ very much in the manner they carry their fruit-wood. Some have short spriggy spurs; others carry the fruit-buds mainly on the extremities of long shoots The pruner needs to take into consideration the individual character of his trees. With some of the strong-growing varieties a system somewhat akin to the rod-and-spur system for vines needs to be adopted. A great mistake made in pruning is that of leaving too many leading shoots, thus making the tree too dense, to the injury of the fruit-bearing shoots. The peach tree requires to be kept very open, as light is esential to the maintenance of fruit bearing wood along the branches. Summer pruning is essential to the successful cultivation of the peach. This consists in rubbing off or cutting out surplus growth, thus producing better ripened fruit-wood. Of varieties of peaches there are a large number. The Emperor Alexander is about the earliest variety, ripening in this locality about the first week in December, and from that time there is practically a regular succession until the middle of April, when the Lady Palmerston, one of the latest worthy of cultivation, is in season. The yellow-fleshed varieties are mostly of Californian introduction, and though not possessing the deliate flavour of the white-fleshed varieties, are good all-round peaches many of them being suitable for either dessert, canning, or drying.

Of the yellow-fleshed variety the early Crawford is one of the best. Ripening about mid season, it is handsome in appearance, a regular bearer, carries well and is of excellent flavor.

Other good varieties are the Elberta, the Globe, the Wheatland, Susquehanah, Early Canada, Briggs' Red May, Amsden's June, Royal George, Mountain Rose, Sea Eagle, and Whatmough's Seedlings are to be recommended. With the first mentioned four the great drawback is their tendency to shed their fruit buds. It is wise to defer pruning these varieties until the buds are beginning to swell, as you have then a better idea of the number of fruit buds to leave.

Two varieties which I have not mentioned on account of their lack of carrying qualities, viz,, River's Early and Early Silver, are worthy of a place in the amateur's garden.

Of clingstone varieties. Royal George, Nicol's Orange and Yellow Italian are the best.

Thinning of fruit and irrigation are essential to the production of first-class fruit on the plains. There is, perhaps, no fruit which responds more to judicious irrigation than the peach,

The peach, in common with nearly all the orchardist produces, has its enemies. The two most to be feared are the aphis and the curl fungus. The most effective treatment of the aphis is fumigation by means of tobacco smoke, the trees being encased in a tent. This is only practicable where cultivation is carried out on a fairly large scale. A spray composed of tobacco water, if applied at brief intervals of two or three days, will keep the pest in check. Other remedies are kerosene soap and emulsion

The curl leaf must be treated when the buds are bursting, if spraying is to avail, and the best material is Bordeaux Mixture. As curl leaf depends on favorable conditions to work its ravages, and when the disease manifests itself it is too late to cope with it, it is well to be forearmed by spraying all the trees liable to be affected,

In reference to the aphis, it was stated as being within the bounds of possibility that a variety would be discovered which would act as the Northern Spy stock for the apple, and used as a foundation stock render it immune or resistant to the attack of the aphis.

Mr H. Jacob, of Mildura, states—'I have now all the maize in silo. I also put in some green barley. The silage has turned out better feed than I expected, as the maize was rather dry, and the cattle ate the cobs only, wasting the rest. Now. all of it has a sweet smell, and the cows are very fond of it and are milking well. I have no waste; the cows eat up every scrap. Under irrigation, silo is a necessity.

Sorghum
Amber Cane Lucerne
Essex Rape
Globe and Long Red Mango
And Paspalum Seed

o o o o

Bone Dust

Bone Super Ammonia
Etc.

Shell grit | Oyster shell
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JONATHAN

Fruit medium size, conical and regular in its outline, over 2 inches in diameter and 3 inches high. Skin covered with bright red, becoming dark red when exposed to the sun, a brilliant and beautifully colored apple. Flesh white, tender and juicy, with a good flavor: eye closed, set in a deep rather broad basin, stalk about three quarters of an inch long, set in a deep and regular cavity.

In season from February till June.

The tree is rather a moderate grower, making slender wiry wood of a greyish brown color. It comes into bearing early and is a regular and good bearer.

Downing says—'The original tree of this variety is growing on the farm of Mr Phillip Rick, of Kingston, New York. It was first described by the late Judge Buel, and named by him in compliment to Jonathan Hasbrouck, of the same place.' It was introduced into Victoria by the Royal Agricultural Society about thirty-five years ago, and has become one of the most popular varieties with all market growers.

The variety first introduced as Jonathan, when it fruited, turned out to be Esopus Spitzenberg, while the true Jonathan was introduced under the name of Marston's Red Winter. This gave rise to great confusion amongst the experts. To settle the matter the Jonathan was again imported from America, when it proved to be the same variety previously introduced as Marston's Red Winter.

Cleopatra, or New York Pippin

Fruit medium size, about 3 inches wide at the widest part and 3 inches high, conical, even and regular in its outline. Eye closed, set in a small deep corrugated basin; stalk long and slender, set in a small deep funnel shaped cavity, which is generally of a green color.

Skin green, covered with small white specks. When fully ripe it is of a beautiful clear lemon yellow color with a fine clean skin—a most beautiful apple. The seed cells are often surrounded by a large hollow cavity, which sometimes causes decay: flesh white, tender and juicy. with a fine sprightly flavor.

It is in season from February till November, and is one of the best and longest keeping apples.

This variety is subject to bitter pit, especially on young trees, and on larger trees on which there is a light crop.

Where the trees are bearing a good crop the fruit is generally clean and good. It is also subject to the scab (Fusicladium dentriticium) and should be carefully sprayed with Bordeaux mixture.

It is one of the very best apples for export, especially in the warmer districts of the State, as it is one of the earliest export apples to mature. It can be shipped early in February.

Although the fruit may not have grown to its full size when picked it will ripen and color without shrivelling, if kept closely packed,

The origin of this valuable apple is unknown. It seems to have been first introduced into Victoria from Tasmania. The trees in an old orchard at Harcourt, planted in 1855, were obtained from Tasmania, and amongst them were some trees of the New York Pippin.

Mr L. M. Shoobridge, Glenora, Tasmania, writes—'I had some trees in a garden planted about 80 years ago, and there were some New York Pippins in it, so it is evident that the variety has been long established here. I do not think it is a Tasmanian seedling.'

This variety seems to have been known in the early days under the name of the New York Pippin. How, or when it became known as Cleopatra the writer has been unable to ascertain. At one time it went under the names of Pomme de Roi, Pomeroy and Spanish Reinette.

Notwithstanding its drawbacks this is one of the most valuable apples for export, and should be largely grown for that purpose. In Tasmania and South Australia it is also one of the leading export apples.

A Method of Preventing the Rapid Decay of Ripe Fruit.

Soft fruits like strawberries were immersed for ten minutes in cold water containing 3 per cent of commercial formalin. On removal such fruit was immersed for five minutes in cold water and afterwards placed on wire netting or some similar open material to drain and dry With fruit having a rind or skin that is not eaten, like bananas, mangoes, etc., the immersion in water after treatment with the formalin solution is omitted.

Fruits purchased from shops in the market and thus treated kept perfectly sound after a similar quantity of untreated fruit from same lot had become mouldy or decayed, as follows:—Cherries seven days, gooseberries seven days, grapes four days, pears ten days, and strawberries four days. In this experiment all of the fruit treated was perfectly ripe. It is thought that if the fruit had been treated at a little earlier stage the results might have been still better. This method of treatment, it is thought, will be of great commercial importance in shipping tropical fruits.

Preparation of Fruit Pulp.

Hard fruits, such as apples and pears, are cut into small pieces without being peeled or having the cores or seeds removed and placed in cold water containing 1.5 oz. of salt to the gallon to prevent discoloration. The fruit is then boiled to a pulp and strained, a yield of about one-fifth the original weight being obtained. Plums and soft fruits are treated in practically the same manner. With plums the strained pulp is sweetened with about 4.5 lbs. of sugar to each cwt. of fruit and the boiling continued until the pulp is thickened sufficiently to hang from the spoon without dropping. With raspberries and strawberries the boiling must not be prolonged and the pulp need not be strained through so fine a sieve as in the case of plums.

"The principal points to which care should be devoted are the processes of boiling the fruit. The first boiling should be continued only as long as the consistency of the fruit is such as will enable the pulp to pass through the sieve for straining, and at the second boiling the pulp must not be allowed to get too thick, otherwise it will acquire a bitter flavor."

PEARS

By James Lang.

The Council of Agriculture gives some useful information upon the best variety of pears for export.

Winter Nellis has so far given the best results. It is generally landed in fairly good condition, and being also a pear of the first quality realises a high price

Exception may be taken to this variety on account of it being a shy bearer in some districts but this is due in a great measure to faulty pruning. The tree has a tendency to form too many ripe spurs, and so exhausts itself in blooming; but if the fruit spurs are well thinned out at pruning time, the result would be a more satisfactory setting of fruit.

Josephine de Malines is also one of the best varieties, and when landed in good condition realises a high price.

Beurre d'Anjou is another good export pear, and so also are Beurre Cl irgeau and Bretonneau.

Eyewood, generally called Broompark, from which it is quite distinct, is also suitable for export. Glou Morceau also carries well and sometimes brings a high price.

Vicar of Wakefield has been shipped in large quantities, and has been on the whole fairly successful. This is only a second rate pear, as far as quality is concerned, but it is a regular and constant bearer.

The foregoing varieties have so far proved the best export pears, but the conditions under which pears have been carried by the various shipping companies leave room for a good deal of improvement. Pears require to be carried at a much lower temperature than apples, as near as possible 30 degrees Fah. From reports to hand the past season has been a disastrous one for shippers, consignments in most cases arriving in a rotten and absolutely worthless condition, owing to being carried at too high a temperature, or in some cases allowed to get frozen. A good trade could be done with pears if the carrying conditions were more reliable.

It is not essential in all cases, but it is a wise plan, to so arrange garden crops that they follow each other in rotation.

Land intended for planting should be thoroughly prepared some time beforehand, and if it be virgin scrub or forest land a crop of cereals or vegetables should be taken off before planting fruit trees.

Rosary and Pergola

By David Cole.

No garden in England is considered complete without a pergola, and rightly so, for what is more delightful than a walk shaded with festoons of Roses, Wistaria, Tacsonias, Clematis, and other beautiful climbers trained to the uprights and cross beams. In England they are generally constructed with rustic poles.

The ideal place for a pergola is in conjunction with a rosary, as shown in the sketch. The structure in the sketch is my own idea, built for the dual purpose of beautifying the garden and to make a breakwind by leaving one side all latticed. The laths are crossed four inches apart, which gives room to put the hand through when tying up the climbers It also serves the essential purpose of allowing the wind to filter through, which for many reasons is better than having the laths nailed closer together. If the position of the garden does not require a breakwind another idea is to have the pergola constructed through the centre of the rosary each way to form a cross. The sketch given, however is simple, and designed to show what is required in making a rosary.

In the first place care should be taken to adapt the design of a rosary to suit the particular piece of land and surroundings. It must be simply a scroll or geometrical to suit the convenience of the gardener in moving the hose about, and in using the lawn mower.

A principal feature of the design should be to make the rosary appear as large as possible, with ever changing views to show off the beauties and peculiarities of each class of rose, such as the Banksias on the pergola for breakwind, and for the front Cloth of Gold, Devonshire, Gloire de Dijon and climbing Souvenir de la Malmaison.

The pillar roses in the larger beds should be trained to rustic posts with wire netting for tying. Then the beds for Moss roses should be well in view. Here I may mention that Moss roses should be always pegged down. This is the only method to make them a success. The various classes should be separate.

The plan shows four large round beds for pillar roses trained to the rustic posts 10 ft high, or on tripods—posts for preference.

The edging of the plots is of Fairies The two smaller round beds are for the down common Moss rose.

Prominent corners and centres of beds where large plants are marked on the plan are for standard roses and dwarf roses between them.

January is one of the best months for preparing the ground for a rosary. To secure it as permanent and beautiful for many years it must be trenched 2 or 3 ft deep. The bottom of the trench must be picked up and manure in plenty thrown in with bonedust, well prepared, and also mixed with the soil as the operation proceeds. Care must be observed so as to have the manure below the first foot of surface soil, otherwise it will be in the way of levelling. Different soils require some knowledge in the way of trenching.

If the subsoil is of a rubble limestone I would decide to have gravel walks, which should be so placed that you can stand the sprinkler on them, throwing the water clear, so that you can move

If rustic posts are used for the pillars and pergola uprights I must let you into a secret of which few gardeners know the value When putting the posts in the ground always place them in the reverse way to which they grew—that is, upside down. This will strengthen them to a solid firmness and they will not rot.

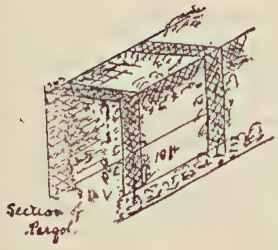
The theory of this little secret is that during the growth of the timber the sap rises in a particular way in the structure of the wood, and water will rise in the same way to the surface of the land when the wood is put in and cause rotting. But if the wood is reversed when the posts are placed in the soil the water will not rise, and this prevents the rotting.

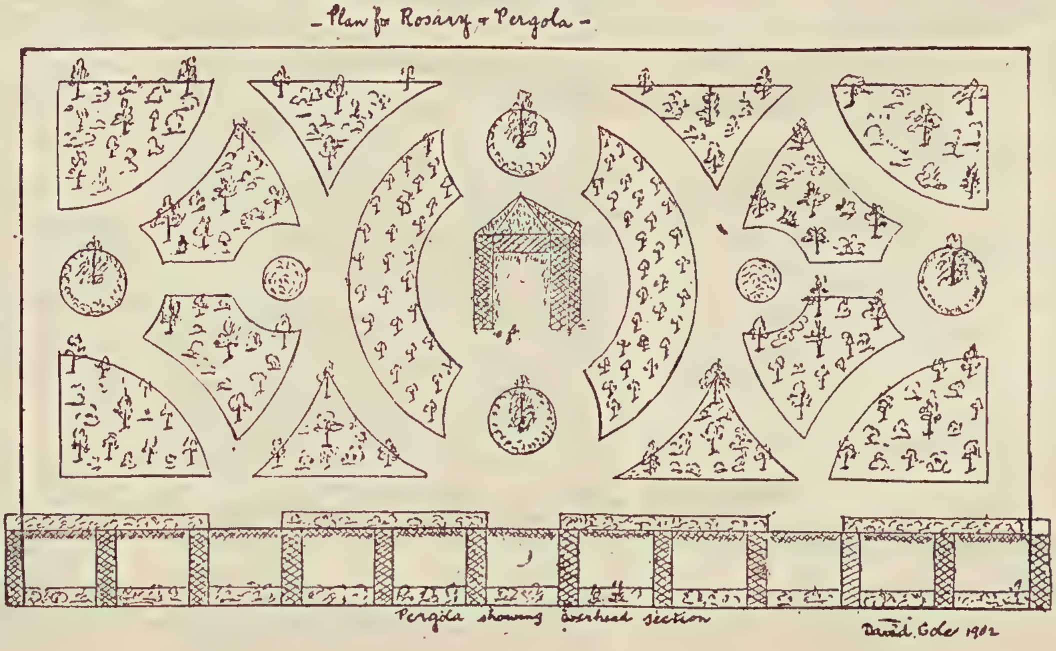
If rustic uprights are not used then take 4 x 4 in jarrah timber. Erect the posts in pairs 2 ft apart, leaving a space of 10 ft between each pair of posts. They should be 9 or 10 ft above ground. Pig netting of 4 in mesh should be stapled up the pairs of posts and over the top. The wall plate should be 4 x 3 timber, and the netting 2 ft deep in the front. As before mentioned, lattice work of 4 in should be nailed on to the windward side and no more effective breakwind is possible. This is far better than a solid wall of wood or iron, for if the structure is made solid a strong wind will curl over the top, and is capable of a deal of harm. No matter how strong the wind may be the lattice has the effect of breaking it into a gentle breeze.

After many years of experience, and having introduced pergolas combined with rosaries into Australian gardens, I can confidently recommend these observations as peculiarly suitable to this climate, and am quite satisfied that no other part of a garden can be made more beautiful and attractive especially in the heat of an Australian summer.

Jonquils and other bulbs go well with roses, as they can remain in the ground. Carnations and pansies also do well with the roses and make a fine variety of coloring, both in foliage and flowers.

Plan of Rosary and Pergola. Pergola showing overhead section at bottom




– Plan for Rosary & Pergola –
Pergola showing overhead section
David Cole 1902

BEST FRUITS TO PLANT

The fruits specified in the following lists are suitable for planting either for market or for home consumption, and are arranged in their order of ripening.

Apples — Williams' Favorite, Gravenstein, Emperor Alexander, Green Alfriston, Jonathan, Reinette de Canada, London Pippin, Esopus Spitzenberg, Munroe's Favorite, Cleopatra, Rome Beauty, Rymer, Stone Pippin, Rokewood.

Pears—Williams' Bon Chretien, Doyenne, Boussoch, Gansel's Bergamot, Poire de Berriays, Beurre de Capiaumont, Beurre Hardy, Beurre Bosc, Beurre d'Anjou, Marie Louise, Eyewood, Winter Nellis, Josephine de Malines.

Plums—Early Rivers, Early Orleans, Angelina Burdett, De Montfort, Grand Duke, Diamond, Washington, Yellow Magnum Bonum, Pond's Seedling, Coe's Golden Drop.

Apricots— Oudin's Early Peach, Royal, Hemskirke, Mansfield Seedling, Moorpark, Dundonald.

Peaches—Amsden's June, High's Early Canada, Alexander, Brigg's Red May, Hale's Early, Crimson George, Royal George, Elberta, Foster, Prince of Wales, Lady Palmerston, Salway.

Cherries—Early Purple Guigue, Burgdoff's Seedling, Twyford Bigareau, Early Lyons, Eagle's Seedling, Black Bigarreau, Bedford Prolific, Bigareau Napoleon, Florence, St. Margaret.

Figs — White Genoa, Large Black Genoa.

Currants—Black Naples, La Versaillaise (Red), Carter's Black Champion, Bertyns No. 9.

Strawberries—Edith, La Margauerite, Uptutmark, Trollope's Victoria.

Pruning should be pushed on until completed.

South African Bark Trade.

The following particulars of the black wattle bark trade of Natal are taken from the annual report for 1905 of the Durban Chamber of Commerce—

" The quantity of black wattle exported in 1905 was 17,513 tons, of a declared value of £102,665, as against 15,819 tons declared value of £92,988, for the previous year. At the beginning of the year 1905 the mallet bark competition fore shadowed in last year's report practically upset the European markets. About twenty thousand tons of this article, which is derived from the eucalyptus occidentalis, a tree growing in the virgin forests of Western Australia, were imported into Hamburg, the chief centre of the European markets for tanning material in general and wattle bark in particular. As the Natal wattle industry is dependent on the Hamburg market to the extent of about four-fiths of the export, it is not surprising that in consequence of the mallet bark competition prices for Natal black wattle bark should recede."

Viticulture.

GRAFTING.

The practice of grafting is a very ancient one. We even find it mentioned so far back as 300 B.C , and frequently referred to in the old classic authors. Modern grafting is of course widely different to the ancient methods, but the principle is the same.

Grafting was not applied extensively to the grape vine until the outbreak of phylloxera, and the subsequent wholesale destruction of vineyards which followed.

The operation is not a difficult one, and only requires ordinary skill and intelligence on the part of the grower.

Theory of Grafting.

Grafting is the operation of removing a bud or scion from one variety and placing it in contact with the wood of another variety, which is to be used as the stock. At the points where the scion and stock meet a growth appears, which is known as the callus. This gradually spreads until it meets and unites. The sap then flows between the stock and the scion, and the grafting is completed. The result of the operation is that the buds, leaves, blossoms and fruit of the scion are nourished by the sap and roots of another grape, whilst the roots of the stock are developed by the leaves of the scion.

The essential condition for success in grafting is the complete and even contact of the surface of the scion with that of the stock, and care must be taken to bring the cambium or generative layers of the scion in close touch with those of the stock. The other conditions necessary for a good and rapid union of scion and stock are a right temperature, a certain amount of moisture and the free access of air. If the temperature is too low the vigor of the stock is impaired, and either failure results or the growth of the scion is weak.

On the other hand if the temperature is too high the scion drives up before the union is completed whilst sudden changes of temperature are always dangerous. The growth of the uniting tissues is assisted by the presence of fresh air, and if the junction is constantly wet the free access of air is impeded and the respiration of the new tissue hampered.

Affinity.

We have already remarked that the physiological condition of the grafted vine is abnormal. We have two plants of the same species, it is true, but they differ widely in their habits and characteristics. The one a wild, uncultivated variety from the plains, forests and mountains of America; the other the result of a thousand years of careful selection, crossing and cultivation in Europe. These two are, as it were, made one, and they become absolutely dependent on one another for their very existence.

It must be obvious to the reader that for this union to become a complete success the two must be, as the French say *en rapport*, or, as nearly as the English language describes it, they must display a marked affinity for each other.

Affinity may be described as a complex relation between the tissue or protoplasm of the scion and that of the stock. Where the relation is a harmonious one and the two show a liking for each other, the union is soon complete and both flourish. The roots of the stock develop indifferent to the louse so dreaded by its scion; the scion flourishing vigorously and bearing fruit abundantly, undisturbed by the fact that it is being nourished by a foreigner and an alien. In other cases, where the affinity is weak or absent neither prosper and both are subject to disease and even death. Others after displaying an apparent liking for each other for some years, suddenly fail to agree and the union is dissolved.

The varying degree of affinity between the various stocks and scions can only be determined by years of careful experiments and patient observation, and the growers should not plant American vines and graft them indiscriminately.

Tools Required

No elaborate tools are necessary for the purpose of grafting: the only ones required are a wedge knife for splitting the stocks and keeping the wedge open for cleft grafting on old vines, a pair of secateurs, a saw, and grafting knives.

For binding the grafts the use of raffia is strongly recommended. It can be procured from any seedsman for about a 1s. a pound: it is very light, and one pound will do many thousand grafts. It is strong, and at the same time soft and supple, and much better for the purpose than string. It does not rot easily, but in wet localities or very moist soils it should be soaked in a very weak solution of bluestone before using. This prevents it rotting before the graft has united.

Care should be taken to rinse it in clean water after soaking in the bluestone solution, otherwise the copper might injure the cellular tissue of the callus.

Wool is also suitable as a binding material, whilst fine rubber is the best ligature for use in green grafting.

Methods of Grafting

The chief consideration in the question of grafting is the choice of methods to be employed. For practical purposes we will limit ourselves to the seven principal ones, and select the best. Grafting may be performed upon either cuttings or upon rooted vines. The best known methods are the following—

1 Single or double cleft grafting ... For old vines.
2 Side grafting or Cadillac method.... for old vines.
3 English cleft grafting...For cuttings or young rooted vines.
4 English whip tongue grafting ... For cuttings or young rooted vines.
5 Splice grafting ... For cuttings or young rooted vines.

Callousing.

This is an important operation by means of which the knitting tissues between the scion and the graft is started before planting out in the nursery. By this practice, now adopted in all wine growing countries, a much higher per centage of successful strikings is secured to the grower. For the purposes of this operation it is necessary for the grower to be provided with a small forcing house or frame, where the grafted cuttings may be kept at an even temperature

The grafted cuttings are placed in a box between layers of moist moss, and the forcing house kept at a steady temperature of 60 degrees for a month. Near the end of this period it will be observed that a callus or growth of new uniting tissues is formed at the points of union between the scion and stock, and the buds burst, throwing delicate shoots. As soon as this callus is formed the cuttings are then subjected to less heat and exposed to the full light. This will harden the callus and cause the leaves to turn green, thus preparing the cuttings for removal to the less equable temperature of the nursery. The operation is not a difficult one to carry out successfully, and the time and trouble expended on it is amply repaid by the increased number of successful grafts at the disposal of the grower

A frequent cause of failure in callousing grafted cuttings is the presence of mould, which destroys the newly formed knitting tissue and prevents a successful union. To avoid this the moss used should be thoroughly sterilised before being used by steaming it, or failing this by scalding it in boiling water As a further safeguard against fungoid growths pieces of wood charcoal should be placed throughout the layers of moistened moss.

Time of Callousing.

Another important factor in securing a high percentage of strikings is the time of performing the operation. It is essential that the soil should be in a warm state when the calloused cuttings are planted out, otherwise the sudden change of temperature from the warm atmosphere of the forcing house to the cold soil of the nursery would destroy the knitting tissue and cause many misses.

The operation should therefore not be performed in winter, but deferred until the spring, about six or seven weeks before planting. Then it will be much easier to keep the forcing house at an even temperature, and the soil outside will be sufficiently warm to plant out straightway in the nursery after callousing without any fear of a check.

After planting out it is necessary to cover the ligature with a handful of sand or light soil. This prevents the callus being dried up or destroyed by the wind or sun. On the other hand clayey or heavy soils should not be used for this purpose, as they prevent the free access of air, hampering the respiration of the new tissue and by keeping it wet causing it to rot.

The Poultry Yard.

Utility Poultry at Sunny Bank Yards.

To the man who lays a good foundation in poultry breeding and pursues the industry on systematic lines success is assured. Of this there are many instances to be found in the Mount Barker district, but in no case has success been greater or more pronounced than in that of Mr M. H. Cartwright, of the Sunny Bank Poultry Yards at Little Totness. He began operations a season ago with teams of Black and White Orpingtons and Indian Runner ducks, the quality of which is self-apparent from their accomplishments both in the show pen and as layers. The yards are located in a fine position, and, cared for by kind and thoughtful hands, the stock enjoyed ideal surroundings from the first and have responded right royally in returning large profits for the care bestowed upon them Pen I. of Black Orpingtons, comprising a cock and three hens, all about 15 months old and of the well-known Sargenfri strain, possess unusual quality. The cock gained first and special prize and one of the hens second prize in strong competition at the poultry show at Mount Barker last year, and it is expected that the cock and one of the hens will also catch the judge's eye and cards at the exhibition here next month. The quartet are fine, typical birds, and the hens last year averaged 13 doz. eggs each. This, like other records quoted below, is no vain boast. Mr Cartwright conducts his yards on business lines, and his daily record book shows that his Black Orpingtons for the twelve months returned a profit of 4s 6d in eggs alone. Sittings from these at 10s 6d are a gift Running about at grass are about half a dozen Black Orpington pullets, while three cockerells are penned up, and for birds eight months old they all would be hard to beat, having plenty of size and weight, perfect plumage, and withal a credit to pen No I. and their breeder. A new variety in White Orpingtons lends much interest to the yards. The birds, which are from Brockman's stock imported from Cook & Son's in Kent, are hardly so large or loose feathered as are the black variety, but as layers they are much earlier and A1, and as table birds carry rather more flesh and are of splendid flavor. The pen consists of a cockerel and four pullets, all very pleasing to look upon, and the pullets commenced laying at six months of age. In other yards are three cockerels, brothers to the above and all birds that fill the eye remarkably well. They appear a breed that is going to become popular, and at a guinea a sitting the eggs are remarkable value, especially for birds that have such excellent credentials.

The reputation of the Indian Runner duck as the "queen of layers" in her order is generally recognised. Specimens at Sunny Bank came from the Sargenfri Yards and are tiptop in quality, the drake having taken first and special and one of the ducks (by no means the best) second in keen competition at the Mount Barker Show last August, and are expected to further distinguish themselves locally this year. These are all about 16 months old, and a testimony to the laying ability of the strain is forthcoming in that the two ducks now living laid all the year round, excepting for four weeks, gave 14 dozen eggs each for the 12 months, and have produced 100 eggs between them in ten weeks this year. The profit in 1905 was 6s per duck, which speaks for itself. In another pen are two drakes and four ducks, progeny of the above and all first-class specimens of a grand breed, eggs from which here are the essence of cheapness at half a guinea a sitting. Mr Cartwright feeds his birds with dry stuff as chicks and later with bran and pollard (occasionally seasoned with bullock's liver) in the morning, green stuff in abundance at noon, and wheat at night, and that the ration produces the very best results will be readily admitted by all who accept the cordial invitation of the proprietor and visit the yards.—Mount Barker Courier.

The keeping of poultry, gulls and other birds in infected gardens is to be commended, as it is astounding what a number of slugs some of these birds can devour. Young ducks are useful helps in this way, but they are too fond of peas and many other vegetables to be trusted in most gardens. Tobacco is best used in dust form. This substance appears to paralyze the slugs which, together with snails, may frequently be found either dead or helpless in the dust of tobacco. They cannot stand the substance in any form, but they will sometimes cross leaves and even stalks of refuse tobacco—the dust appears to act as a barrier. Slugs show a decided preference for their own kind. If a number are killed they are greedily eaten by their comrades who will not leave a meal until the last particle is gone.

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Starting.

Good reader, no doubt you are one of the many who have for years been waiting and wanting to start with thoroughbred poultry, but have put this good work off from time to time from some trifling cause.

Now, it doesn't take the earth in value to start, and start right into it, and now a word to those who contemplate starting this spring.

Let us say from our long years of experience, and much of it very costly at that, as we had no one of experience to inform or explain the ups and downs to us, don't wait too late as the time is near for hatching, and we have many hundreds of beautiful little fellows off and doing fine.

Study out the breed you wish to try and that best suits your taste, also one of the most popular varieties as well as the most profitable, and then send to some reliable breeder whose strain is well known for his or her catalogue or circular fully explaining their matings, with prices on eggs as well as show winnings, then study all over closely and go for the best every time and leave cheap, shoddy birds or eggs alone, as the best is none too good for the beginner.

Go to the breeder whom you can rely upon, and who can offer you good quality, then buy of him.

When a fancier uses particular care in selecting and mating up his breeding yards, and succeeds year after year, and has at all times quality to offer, one can hardly have a failure in sending orders to such breeders, for if he will send to such for the best eggs he will in most every instance get full value and satisfaction.

Of course one should not expect too much of a good thing, in fact if a 75 per cent. hatch is received he should consider himself extraordinarily lucky, and a 60 per cent hatch very lucky.

Do not always expect a 100 per cent hatch, as you surely are aware that very few breeders obtain such hatches themselves at home although every breeder's ambition is to get all the fertility in his eggs possible.

Selling Eggs and Poultry.

As a general rule hens are kept on the farm for the primary purpose of producing eggs.

Unless the eggs are produced in superabundance, which is seldom the case, the farmer's wife or daughter can dispose of them to the best advantage by selling direct to private customers in the nearest town. These private customers can best be obtained by first offering for sale only the highest class of products, and then keeping all offerings up to the high point thus established.

Once a reputation for dealing in only the very best eggs and chickens is established it can only be lost by wilful neglect. A few private customers thus secured will soon begin to depend entirely upon one source of supply, confident that it is the best, and they will not grumble at paying the highest market prices.

Many farmers have regular marketing days on which their customers expect them, and they will not buy of any other if they are sure of not being disappointed.

It is one thing to raise chickens and produce eggs: it is quite another to dispose of them to good advantage, but it can be easily done.

Setting Hens

To be really successful one must begin further back than the mere act of putting the eggs under the hen, which means the purchasing of eggs from a reliable breeder of stock of known vigor and worth, for the chick, like members of the human family, has the right to be well born and should be given that right by proceeding as above.

After we have made things ready for the reception of the hen, who should have been left for three days on the nest to prove her good intentions, we remove her after dark to the nest prepared as follows: In a box about 12 x 14 x 20 inches we have turned on its side we place a shovel ful of moist earth, loam preferable, in which has been mixed a small shovelful of coal ashes, and on this the nest material of straw without grain in it, shaping so not to leave too flat, neither so deep as to hinder the hen in turning the eggs—the form of a saucer is about right—and over all we sprinkle a good supply of lice powder. This done we dust biddy freely with the same and consign her to her three weeks of lonesomeness.

Have your nest room in a quiet spot, sheltered and not too light, provide a dust bath, good sound grain and fresh water daily, and twice during incubation dust the hen freely, and you may be assured of a good hatch.

It is usual with us to set two or more hens at one time, as in so doing if the weather be such as to permit two broods may be given the one hen to mother, and the other hen returned to the yards and other duties.

Eggs should be tested at the end of ten days, and all infertile ones removed, thus giving more room to the fertile ones and lessening the chances of nest soiling by broken eggs.

Should this happen at any time, and it does frequently where hens are used, take a basin of warm water and wash the eggs, dry carefully and return to the nest prepared with clean straw and no harm has been done.

It will do no harm to confine the hen to the nest the first day by a screen in front, and removing this the second morning, giving the hen a chance at feed and water, by which time in usual cases she will be true to her trust.

The principal element in the action of bones is phosphate of lime, which is indispensable to the growth of nearly all plants, but it is scarce in many soils and is speedily exhausted.

The Dairy.

Training the Young Dairy Animals.

When a heifer first comes into the dairy the glands which constitute her udder are in an undeveloped condition, and need good management in order to secure an abundant and prolonged flow of milk. From the start see that every drop of milk is drawn out. Rub the udder, carefully kneading it, especially if it contains any very hard lumps. If lumps form which seem difficult to reduce bathe with water as warm as the hand will bear. Repeat this three or four times a day. If the cow is intended for the dairy, under no conditions let the calf run with her. In feeding, be careful at the start not to feed too liberally; but after a few days have elapsed it will be well to gradually increase her rations. Liberal feeding is necessary in order to develop her milking qualities. One advantage in breeding the heifers so that they will come in after the grass has started is that it will help materially in securing a good flow of milk. It is necessary to secure not only the largest flow of milk, but a flow for the longest season. For this reason it is best in many cases not to breed the heifer for her second calf for several months. Let at least twenty months intervene between the first and second calf. In many cases a young promising heifer is ruined as a profitable cow by breeding her too soon after her first calf as her energies are directed to the growing of the calf she is carrying, and this affects her milk giving, and a failure to secure a good development of the milk-giving functions at this time will affect her the remainder of her life. The milk-giving, like other organs, are beneficially stimulated by use, and all reasonable care should be taken to secure a large flow of milk for the longest period possible, and the feeding and management and the breeding must be done in the way best calculated to do this. So far as possible the cow must be liberally fed after she drops her calf, and after the danger of milk fever is past. No matter what her treatment may be in other respects, she cannot be developed into a good dairy cow unless she is well fed, and the ration must be one calculated to enable her to give the largest flow of milk. This is of more importance with a young heifer that must of necessity need development than with a cow whose habits are fairly well established. Many dairymen and others who milk cows for profit believe that when a cow reaches the age of seven or eight her useful years are over, and that she should be replaced by one younger. But, other things being equal, this is a mistake. A cow that has been well cared for, with generous rations and proper attention given to her comfort through all seasons of the year, is better and will make a more profitable return at eight years old than at an earlier age; in other words, she is in her prime, and she will continue in this condition several years, and will not be considered an old cow until fourteen or fifteen years have passed. Cows with first calves—at two or three years— are generally unprofitable in their milk yield, and one really good cow between seven and eight years old will pay a better revenue than two that are performing their first year's duties in the dairy herd, and she will probably consume but a little more food than the younger ones.

On Breeding.

Those who are seeking to breed cows for the dairy, whether they be thoroughbreds or whether they be crossbreds, should remember the adage that "like produces like or the likeness of an ancestor." See that the dam of the bull you propose to use has the characteristics in either milk giving or butter making, and in form and size of udder that you desire to see perpetuated in your herd, that his granddams are possessed of like characteristics, and so back, if possible, to at least four generations. If the female ancestors be possessed of those characteristics you seek to have established in your herd, then you may be reasonably assured that the bull will, when mated properly with desirable cows, produce satisfactory offspring.

Those using what is known as an "inbred" sire, that is, one in-bred to a common ancestor on the part of both sire and dam, should bear in mind that while the bull so in-bred will probably have the ability to fix the characteristics of the common ancestor to whom he is in-bred, he will as surely fix and eggerate the undesirable features of the ancestor as he will the desirable ones. Therefore, it is especially necessary to see that the ancestor to whom he is in-bred, or his descendants through whom your bull traces to him, be not possessed of characteristics that you do not desire to perpetuate in your cows.

Those breeders of thoroughbred stock who are not financially in a position to go outside their own herds for desirable sires, should mate the sire they have in use to their best cow. They should retain her son, mate him with the next best cow not related to the dam, and so on until they produce a sire which has, as female ancestors for four generations back, desirable cows. In this way they are pretty sure to have a bull that will produce in his offsprings the sought-for qualities, provided the cows to which he is bred be themselves desirable.

Floors and Troughs in Stables and Cowsheds.

The best material for floors and passages is undoubtedly concrete, and where good sand is available it should be adopted in preference to all other classes of flooring. If the passages used by the cows are laid with concrete, they should be channelled into squares of 3 in. or 4 in., in order to prevent the cows slipping. If cement is expensive and bricks are cheap, the latter may be used for the stalls; but in any case cement or heavy stones are to be preferred for the heel or settle stones, as they are called in Scotland. If the byre is to be used for Jersey cows or the smallest sizes of Ayrshires, the stalls should be about 6 ft. 10 in. from the wall to the edge of the manure channel. If Ayrshire cows are to be used it should be about 7 ft. 2 in. long, and if Shorthorns from 7 ft. 2 in. to 7 ft. 4 in. long. For Jerseys or Ayrshire the stall should be from 6 ft. to 7 ft. wide, and for Shorthorns 7 ft. to 7½ ft., according to size. If the heel stone is of cement, the surface should be chanelled, and be 6 in. above the bottom of the manure channel. If flags are easily procured they may be used for the walks, manure channel, and stall divisions. Cobble stones make the worst walks and channels, and should never be used if anything better is available.

The manure channel should be 2 ft. wide, and have a fall in its length of half an inch for each cow, and a fall across of half an inch also, the side next to the cow's heels being the highest. These two details, although trifling in themselves, are of immense importance as far as the cleanliness of the cows is concerned. The cows should drop their excrement at the side of the channel, close to their heels. If the channel is made as wide as suggested, it is very seldom that the manure will cover the whole of the floor of the channel. Consequently, as soon as a cow voids any urine, it at once runs to the side nearest the walk and furthest from the cows, owing to that side being half an inch deeper than the other. As soon as it arrives there it at once flows off to the lowest part of the channel, disappearing in the cesspool in a minute or less from the time it was voided. If the manure channel is made narrower than 2 ft., or if the floor of it is not made with a fall from the cows, the manure will be certain to dam back the urine, and keep it standing and stinking for hours. In the interval, as soon as the cows lie down, they drop their tails into the pool, and later on switch the liquid all over their bodies. Even when every precaution is adopted, extraneous matter will at times enter the milk, but if the channels are badly designed or paved the amount becomes so great as to betoken extreme carelessness. Manure channels deeper than 4 in. at the cow's heels and 6 in. at the walk, are unnecessary and a danger to the cows when stepping over them.

Traps should be inserted at the lowest point of the manure channel in order to intercept chaff, straws, and other solid matter. These with a pan almost filling the cesspool are to be recommended, as they work satisfactorily and are very easily cleaned. The stall divisions may be of stone, cement, iron, or wood, and little preference need be shown for either. Each animal should have a separate trough, with a division at least 1 ft. wide between the troughs, so that no animal can eat out of it's neighbor's trough. This should be rigidly prevented, not only on account of the dangers attending over-feeding, but as a precaution against the spread of tuberculosis. Every trough should be thoroughly glazed or enamelled white or brown on the inside, and the surface should be as smooth as glass. They should be smaller rather than too large, 20 in. by 16 in. by 18 in. being quite sufficient. Troughs made of wood or gutters of brick, as is common in some districts, are a great mistake.

Importation of Pure-bred Pigs.

The Hon. Minister of Agriculture has received the following communication from the Secretary of the National Pigbreeders' Association, of Ruddington, Nottingham, England:—

That the Secretary informs the Minister of Agriculture in foreign countries that export certificates are issued by him, when demanded, for pigs sent abroad, and that such certificates, signed and stamped with the seal of the Association, constitute a guarantee that the animals so certified are pure bred, and entered, or eligible for entry, in the Herd Book of the Association. My Council decided upon taking this step in consequence of the fact that a large number of pigs have been exported as "Large Whites" that were not pure bred, and therefore not eligible for the Herd Book of this Association.

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Principles of Horseshoeing.

By Dr. Geo. Fielding.

To keep the foot healthy and sound the hoof must not be mutilated by knife or rasp The well of the hoof is continually growing downwards, and would grow to an indefinite length if it was not worn by the ground when the horse is in an unshod state. In the shod condition it grows at about the same rate, but the shoe prevents its being worn, and every time the horse has to be reshod the superfluous horn which has accumulated at the lower border of the wall since the last shoeing has to be removed by the rasp. This is all that is necessary in the way of rasping and cutting.

In reducing the wall to a proper length and so preserving the natural angle and direction of the hoof, should consist the principal item of the farrier's skill.

The reduction should be made from the lower or ground border of the wall, never from the front surface, and reduction should be so effected as not only to bring the hoof to a proper length, but to keep it also in proper relation to the direction of the limb—that is, the toe must not be too long, the heel too high nor too low, nor one side of the foot higher than another. The latter condition makes the limb and foot appear crooked when looked at in front, and strains the ligament and cartileges on one side of the limb. As a general rule the wall should be lowered to the level of the unpared sole.

The sole and frog should on no account be pared or touched by the knife, nor should the heels be opened. The horny sole and frog, unlike the wall, do not grow indefinitely, but when they have attained a certain thickness they throw off the superfluous or old horn in flakes or scales. This natural thickness of the sole and frog horn is an absolutely essential condition for the maintenance of the foot in health and protection from injury, and in proportion as it is dominated by the farrier's knife so will the foot suffer.

Not only does the solid part play a most important part in protecting the sensitive parts it covers from injurious contact with the ground, or hard bodies such as stones, and keep the hoof strong and sound, but the semi-detached flakes it is always throwing off render great service by acting as so many spring shields when the horse puts his sole on stones or hard, unlevel ground, and also by retaining wet. They are a kind of natural and ever present stopping, which keeps the horn beneath moist and supple. Every flake on sole and frog, therefore, is valuable, and though these may appear as untidy to some eyes as the surface of the oak with its rough bark, yet to deprive them of the dead horn is almost as hurtful as denuding the tree of its covering. By leaving the sole and frog unpared the farrier is spared some useless and pernicious labor.

The shoe worn by the horse should be as light as is compatible with a certain amount of wear, and adapted to the requirements of the work which the horse has to perform.

I have already given reason why no more weight should be added to the end of the limb than is absolutely necessary, in order to diminish the muscular fatigue and straining of tendons and ligaments, and reduce the number of nails required to secure the shoe to the hoof. The shoe, to be adapted to the various services of the horse must be varied more or less in form and other particulars. But for the fast-going, and especially weight-carrying horses, it should not prevent the frog resting on the ground, as it is these horses which most frequently suffer from navicular disease. And even with horses employed in slow draught, it would be well if their frogs could be allowed the same privilege, as they would then be much less liable to ossification of the lateral cartileges of the foot (side) bones.

Whatever pattern the shoe may assume it should not be bevelled on the foot surface, so as to throw the weight on the margin of the foot, and leave a wide space between it and the sole.

The upper or foot surface of the shoe ought to be a plain surface, resting alike on the wall and the border of the sole, as the latter is well adapted for weight-bearing, and the more the weight is distributed over the lower face of the hoof, the better can the foot perform its functions and retain its soundness. This applies more particularly of course to the foot.

Not only does this kind of shoe assist the foot better than the bevelled shoe, but it prevents suction in heavy ground and gives no lodgment to stones, etc., as well as yielding other advantages of a less noticeable kind.

But instead of having the lower or ground face of the shoe quite plane as is usually the case, it should be bevelled or concave. In fact the best form of shoe is undoubtedly that which is just the reverse, so far as its surfaces are concerned, of that in every day use. With the ground face of the shoe concave, a better foothold is secured and stones are less readily picked up.

Calkins for fast-moving horses should be dispensed with, if possible; or if they must be used they should be low, and of the same height on both sides of the shoe. If worn by heavy draught horses, they ought to be supplemented by a toe piece at the front of the shoe of the same height as the calkin. This not only keeps the foot level, but greatly assists the horse in draught.

The best time for general manuring is from the fall of the leaves in the autumn to the rising of the sap in the spring, and this is the proper time for applying all slow acting manures like stable manures, superphosphates, green manuring, etc. Quick acting manures such as nitrate of soda, potash, dried blood, etc., should be administered to vines in the spring, when the buds are bursting and roots active.

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Flower Garden.

The Camellia.

By J. Cronin.

The camellia is a handsome evergreen winter-blooming shrub, found native in China and Japan The florists' varieties have been produced from Camellia Japonica, a species that was introduced into England in 1739. This species is described as a lofty shrub or small tree, found growing wild in woods partially shaded from the sun by other trees.

Robert Fortune mentions several varieties that he saw in the central and southern provinces of China that had attained a height of from 30 to 40 feet. Some time after the original importation several forms of varieties of C. Japonica, that produced flowers of varying colors and forms, were introduced into European gardens, and it was from these principally that the fine varieties now grown in our gardens were raised.

In addition to Camellia Japonica, C. sasanqua and reticulata are worthy of cultivation.

In this State the camellia is easily grown in the cool districts, where, when thoroughly established, it endures extremes of cold, heat and drought. In the gardens in the metropolitan district shelter from large trees or trellis is usually provided, and fine specimens may be seen in many of the large gardens and nurseries. In the warm districts shade conditions are necessary to grow them. The principal point of value in camellias is their blooming when most trees and shrubs are without flowers or foliage. In a fair collection, embracing early and late varieties, some of the plants will be in flower from June till September.

Most of the plants purchased from the nurserymen are grafted on seedlings from single varieties. This grafting requires a heated glass house to insure a success. Cuttings of some varieties will form plants under special conditions, but this method is not often practised, being very slow and uncertain. Layering is the most certain and easy means of increasing camellias. The process differs little from that for carnations, except that the soil should be more carefully prepared. The layers require to be attached to the parent plant, and attended to in watering, etc., for a full growing season at least. Some varieties need two years to form a sufficient root system to ensure free, healthy growth in the young plants. In preparing soil for the reception of layers—practically cuttings only partly separated from the parent plant—no manure should be used. A light, sandy and porous compost is necessary. The shoots should be securely pegged down to prevent any chance of their being disturbed when cultivated. During spring is the best time to layer camellias, and free growing shoots of the previous season are most likely to make good plants. They require to be kept moist during the dry, hot weather.

A fairly friable loam, enriched with well rotted cow or sheep manure and thoroughly drained, will suit camellias well. The best manure to apply to soil around large plants is bonedust. A light dressing should be applied and lightly forked in during winter. A situation sheltered from north winds and full sun in summer is most suitable. In districts subject to severe frost a low situation should be avoided, or the flowers will be spoiled.

One of the most important points in camellia culture is the need of planting carefully. The plants if taken from pots should be set out with the surface roots at the settled level of the surface soil. If planted too deeply they rarely succeed. Temporary shelter should be provided for the first summer, after which they may be expected to endure normal summer conditions.

In cultivating the soil about camellias deep working should be avoided at all seasons. Digging among the roots should never be attempted, as most of the feeding roots are near the surface and would inevitably be destroyed. A light skimming of the surface and a top dressing of sweet good soil is all that is necessary in the way of cultivation.

The plants need a fair amount of water during summer.

The only pruning needed is the removal of any parts that will tend to make the plants crowded with shoots or ill balanced.

An occasional spraying with kerosene emulsion or resin compound will rid the plants of the black scale pest.

The principal varieties are as follows—

White—Alba plena, Fimbriata
Isabella, Bonomiana
Mathotiana alba

Red—C. M. Hovey, C. H. Hovey
Rafia, Mathotiana
William Bull

Pink—Storyii, Mrs H. Boyce
Lady St. Clair
Harriet Beecher

Marble and striped—Wrightii
Giovanni Santarelli
Carlotta Papudoff

Other Forms—Aspasia, Waratah
White Waratah
Sasanqua, Reticulata

Hortensis asks—1. Will it pay to buy produce, say potatoes and onions, and export to Durban, South Africa? 2. Which generally pays the best, exporting or importing in this line? I mean, would it pay better to go to South Africa and import? If we could answer the two questions we would not be running the Australian Gardener, as the market in both countries is subject to fluctuations.

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Shasta Marguerite Daisy.

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John Walton's SWEETS

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Wholesale Factory: TWIN STREET

Shasta Marguerite Daisy.

This handsome variety has been raised by crossing the European Chrysanthemum Maximum with the the free-flowering American Daisy, and re-crossing the progeny with a Japanese variety (Nipponicum); the result being a great improvement upon any of the Chrysanthemum maxima in commerce,

The flowers are devoid of coarseness, although some forms are frequently 4 to 5 inches across, with two to four rows of petals of the purest white, and with a smaller yellow centre, carried on long wiry stems in a graceful manner.

When raised from seed, flowers vary considerably, and many new and beautiful forms may confidently be expected.

While some plants are dwarf, not exceeding 1 ft., others will be 2 to 3 feet high. The dwarf plants are very effective when grown in borders or beds; whilst the taller are particularly useful for cutting.

Some plants will produce each flower on a single long stem; others will give six to twelve full sized flowers on one long stem in the form of a most graceful spray.

Seeds may be sown at any time, and seedlings transplanted when large enough to handle.

Extract from "Illustrated Mail."

By Farm and Garden Expert.

"An entirely new Daisy is the Shasta variety, and those on the look out for a hardy yet pretty plant could not do better than secure some seeds and plant them during the coming spring. This daisy produces four times as much bloom as any other variety, and when cut, will remain in a fresh condition for fully a fortnight, which makes it a unique flower for decoration. The plant, too, is a good bloomer, and will succeed in any soil. When it is stated, too, that it is is a good perennial, blooming better and more abundantly each year, and may be multiplied by simple division of the roots, one feels no hesitation in recommending the Shasta Daisy to all anxious to secure a good, hardy flowering plant for their gardens."

Lawns.

It is too late to plant lawns of couch grass, but buffalo grass succeeds well if planted this month. The most important point is to water considerably, as no dependence can be placed on rainfall, The ground should be well manured and dug at least a foot deep, after which it should be planted some 5 inches deep, and the roots watered as the planting proceeds.

Border Plants

Plant out all kinds of bedding and border plants as calceolarias, verbenas, eupheas, lobelias and petunias.

ROSES.

The rose garden requires much attention at the present time. Both standards and dwarfs should be mulched with well decayed manure, as this not only prolongs the season of flowering, but also increases the vigor of the plants. Where roses are grown for exhibition the leading shoots should be disbudded, which means that the strongest bud upon each shoot must be preserved and all others cut off, so that the whole strength of the plant may be directed to the development of those that remain.

If aphis appear they should be destroyed before the buds commence to open or the petals will be disfigured. Soapy water sprayed over the trees occasionally will rid rose bushes of the fly. One ounce of soap dissolved in one gallon of water is quite strong enough.

Chrysanthemums

should be propagated this month. If for pot culture they should be rooted in small pots, two cuttings to be put in each so that they may be separated at the proper time without disturbing the roots. The best soil for rooting the cuttings in is made of rich garden soil and sand in equal parts. Another method of growing these in pots, where small compact specimens densely covered with flowers are desired, is to put four to six cuttings in each 5 inch pot, and when the time for removal arrives they can be put in larger sized pots without their roots disturbed.

For the outdoor culture of chysanthemums the ground should now be prepared by manuring heavily and trenching to a depth of 15 inches. This will ensure the most vigorous growth with the least necessity for water. By the adoption of this method first-class flowers with good coloring can be produced. A too liberal application of water affects the colors of all varieties except the white ones. A firmer, more stocky growth of stem is secured in deeply manured ground, with a minimum of water, as the roots are thus secure from the effects of summer heat, and instead of the ungainly stems which much water produces, plants handsome in appearance and bearing flowers of the highest quality are secured.

Annuals.

Sow in beds of rich sandy soil a variety of tender annuals, including celosias, balsams, asters, amaranthus and zunias. The beds should be made up in a warm place, or at least sheltered from west and south winds. Hardy annuals may be planted. Sow in the open borders sweetpeas, lupins, convolvulus (major and miner) and sunflowers.

Sweet Pea.

A short time back we advised that sweet peas should be sown. As to their decorative qualities, it appears to us almost needless to have to once more remind our readers thereof. As to cut flowers they are greatly admired, and their attractiveness in this respect demands their culture in the highest degree by everyone possessing space large enough to accommodate them. Should they have been grown when last we advised, they should ere now have attained a nice forward condition, and their flowering qualities will also be beginning to show. Naturally this will not be so should the soil in which they have been sown be of a cold and bleak character. It is, at any rate, desirable that a fresh set of seed be put in to thus effect the purpose of maintaining the succession of flowers. Undoubtedly the sweet pea is amongst the most lovely and sweet scented of our spring flowers, and we cannot urge too strongly upon our readers the desirability of its cultivation. Throughout the winter and spring months their flowers can be had in the best of perfection for a considerable period.

To be enabled to get the full benefit of the sweet pea, it is necessary that they be well staked as soon as the tendrils begin to show on the plants. There are some dwarf varieties in cultivation, which will not require quite so tall stakes, and the taller-growing varieties.

In staking sweet peas it is desirable that the length of the stakes ought to be as nigh as possible as the height to which the plants will grow. If too long stakes be put in they become unsightly in the flower garden, and if too short the benefit of a number of the best of the flowers will be lost owing to the top of the plants doubling over by reason of a want of the requisite support.

Bulbs.

Many varieties of bulbous plants are now in their spring glory, and they will appear to better advantage if supported with neat stakes. Although these flowers, which include daffodils in large variety, the snowflake, hyacinths, ixias, and that exceedingly sweet and useful flower, the freezia, are so charming when carefully tended, nothing in a garden is more repulsive than to see them unsupported and trailing upon the ground.

Plant bulbs of gladioli for summer flowering, also Japanese lilies and tuberroses. Liliums require deep rich soils and prefer shady spots. The bulbs should be planted at least 8 inches deep or the heat will injure them.

The farmer of to-day must learn to think, or he is lost, and nothing is more conducive to exact thinking than scientific experiment.

Rhodanthe Manglesi.

This useful annual, a native of West Australia, makes a charming pot plant, and when well grown and laden with its satiny pink blossoms, few things are more useful for placing in vases in rooms, or for the decoration of side stages in a greenhouse or conservatory. It is easily raised from seed, which may be sown now, and the best way to grow it is to sow in pans of light sandy soil and place somewhere in the warm till the seeds germinate, when the pans should be at once removed to a light and cool position. When the seedlings are large enough to handle, they should be carefully transplanted, about six in a 4½ inch pot and eight in a 6 inch.

THE COMPOST

used should be light and rich, and may consist of three parts loam, one part leaf mould, one part of old mushroom bed manure, and one part sand. Careful watering is advisable in the early stages of growth, but as the plants advance more liberal supplies will be requisite. Rhodanthes require neatly staking before they come into flower, and in very hot weather shading should be given them during the hottest part of the day. A point in their favor is that they are not troubled with insect pests, and therefore are particularly adapted for amateurs, and those who have not much glass accommodation.

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Buds of Spring.

ALTHOUGH in the summer months the activity of vegetative life is marvellous enough, yet its manifestations are far less striking than in the first week or two of the spring, when the leafage, under the genial influence of the sun and shower, is rapidly decking the erstwhile skeleton trees with fresh and verdant growth. We take little note of the further development and ripening when once the leaf has shaken itself and expanded more or less into its normal shape, it is merely a matter of addition, but at the outset there is a suddenness about the development which strikes the eye forcibly. One day the trees are bare and its buds black, the next a flush of delicate greenery is perceptible, and on closer investigation every point is seen to have broken bounds, and the tiny tiplets of the coming foliage are just in evidence. This stage reached, expansion goes on by leaps and bounds, the glistening buds shake out the leaves almost as we look at them, and within the compass of a single week the tree is clothed with verdure, which, as yet unsullied by dust, unworn by breezy friction and unbitten by predatory vermin, has a freshness and charm which the more redundant foliage of summer days can never boast of. Nature, too, demonstrates in every bud a most marvellous capacity for packing; take one of these buds just opened and examine it. The whole bunch of leaves is complete as it emerges, and although they have been built up by the busy cells within the hard resistant shell which is now discarded, there is not a crease in the wrong place, nor a single vein of all the myriads distorted. Mark, too, as the separate segments expand how the stalks lengthen, and each radiating leaflet assumes precisely the right distance to prevent subsequent overlapping, and consequent invasion of its neighbours' right to the sunshine. Each cluster of leaves obeys the same law as regards its own little community, and, although there is an eventual struggle amongst the many communities, the whole tree assumes the best form possible to accommodate the majority. Every bud, too, has its individuality, even on the same tree, but taking different varieties, species, and genera, the study of the bursting bud is soon seen to be of inexhaustible interest. Take the various fruit trees, apples, pears, plums, and so on, with their diverse leaf and flower buds, all determined by the subtle influence of past and forgotten sunbeams. The potent power of these has been hoarded up in those little hard knobs at the tips of the twigs all through the winter, and now break out here into barren leafage, and there into bunches of snowy or rosy blooms, each with a luscious embryo fruit in its bosom, and a store of honey as a sweet reward for the labour of love which the bee is ever ready to undertake and perfect.

Gloxianas.

GLOXIANAS are usually reckoned as hothouse flowers, but this is more from the fact that they require the moist atmosphere of a hothouse than from any necessity for great heat.

From the time they are started in early spring until the buds are well advanced, they must be surrounded by a moist atmosphere, with a temperature from 60 to 80 deg. This can easily be secured even in a greenhouse by arranging for them a box containing an inch or two of damp ashes at the bottom, and having a glass cover, as this gives light as well as protection from dry heat. This glass-covered box should be placed over the hot-water pipes so as to ensure the requisite warmth; it can be raised on bricks if the heat should be too great, or made warmer by cutting a little of the bottom away, just sufficient to let it down on to the pipes, a piece of small meshed wire netting being laid over the holes.

Moss, which has previously been dipped into boiling water to destroy all insect life, is very useful as a layer over the ashes, to retain the moisture. but is not absolutely necessary. The small pots in which the tubers are started can be sunk to the rim in them. The glass should be taken off and wiped dry every morning, as it is very undesirable that the drops collected on the top should fall on the plants, and the ashes at the bottom of the box must be kept quite moist, always using warm or tepid water for the plants.

Gloxianas object to the full sunshine. If in a very sunny position, it is better to shade the glass over them in the middle of the day with one layer of newspaper; they do well without this under the shade of vines, and a vinery is an excellent place for them, if the fires are kept up at night till the nights are warm. Gloxianas treated in this way should be hardened off for a week gradually, as soon as their blooms open, before being used in a room or a dry conservatory, always avoiding any sudden check from change of atmosphere or temperature.

Gladiolus and
Sweet Pea
FINEST COLLECTION IN
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GLADIOLI SPECIALIST,

Mount Victoria . . N.S.W.

Catalogues Free on application.

Boronias.

AMONG the sweetest-scented plants the boronia takes a foremost position, and a whiff of its delicious perfume, which is that of the cowslip greatly intensified, is something not readily forgotten. The boronia belong to the

HARD-WOODED SECTION OF PLANTS,

mostly from New Holland and various parts of Australia, and like many other plants from the same districts they need careful culture, and will not succeed with the rough and ready treatment often given without harm to soft-wooded plants, but with a fair amount of care they are not difficult, and they fully deserve the attention they need.

IT IS ADVISABLE TO BUY PLANTS

in spring, just about the time they are showing their buds, and we will take this as a starting point in our remarks on culture. Place the plants on a nice light soil and attend carefully to watering, so that the roots are never allowed to get quite dry, neither must they be kept overwatered—failure to observe these items fully being sure to lead to disaster. After flowering, let the soil get a little on the dry side; then cut the plants down to within three joints of the last pruning or stopping. For some weeks progress will be slow, and very little water must be given, though it may be increased very gradually as growth is made. The plants may be put out on a bed of ashes in a garden frame, from which the light should be drawn off in all weathers except when rain is falling; the exposure they thus get to air, light, and the night dews finishes up the wood and sets the flower buds. Any plants which appear to require potting should be taken in hand just as the season's growth is completed, as roots are then formed most readily. Take care not to over-pot, as the very slender-foliage plants do not require a great body to support them, and if given it only turns sour.

THE BEST SOIL

is good peat and light, fibrous loam in equal proportions and pulled up into small lumps, which may readily be rammed into the small space between the ball (which should be lifted intact except for the removal of the drainage at the bottom) and the sides of the pots. Mix with the soil sufficient silver sand to make it feel gritty and to keep it open and porous.

POT FIRMLY AND SOLID,

adding only a little soil at a time, so that no hollow spaces may be left, and elevate the ball so that none of the stem is buried below the old soil line. Drain the pots carefully with one large piece of potsherd placed with the concave side downwards, and so trimmed with the hammer that it will not rock when in position. This should be covered with half an inch of small pieces, and on this again, to receive the base of the ball, should be placed a little of the most fibrous soil. The pots should be clean and the plant should have a soaking of water some hours before it is potted, then, if the new soil is in that best of conditions known as "neither dry nor wet," no more water will be needed for a few days. Where these plants are grown in large batches they are frequently given a night temperature of 55 deg to aid the young shoots after they have broken well; but we do not advise this if, to get the extra few degrees of heat, they have to be put with a mixed collection of plants.

Those who wish to propagate their own plants may take off the young cuttings when about two and a-half inches long. If a slight heel of the old wood can be left at the base, or "slips" instead of cuttings are made, they will be all the more readily struck, but cuttings of the ordinary type will also root. Well drain some five-inch pots, fill up to within an inch of the rim with sandy soil of the same nature as recommended for potting, except that it should be sifted fine. On this again put about half an inch of pure silver sand, then dibble in the cuttings, water in lightly, and when the foliage has become dry, cover the pots with bell-glasses in a temperature of 50 deg.; shade the glasses from bright sun until the cuttings have struck. Very little water will be needed, and what little is given should be poured gently round the pots just inside the rims to prevent the centre from becoming too wet. Pot off singly into small pots as soon as well rooted, nurse carefully till established, and then commence to form the desirable bush shape by pinching out the points of the shoots as they lengthen out, repeating this as often as necessary to attain that object.

Lady Farmers.

Earl Carrington, when presiding at a meeting, thus expressed himself on the subject of lady farmers—

In horticultural circles the lady gardener is looked upon as being quite a new introduction, but this is not so in agriculture, for the lady farmer is half as old as time itself. It is true we do not train lady farmers in collegiate establishments, and turn them out chock full of science to compete with the mere men practitioners, but the lady farmer is a power in the land nevertheless. It would be impossible to say how many cases there are in which farmers have died and left widows with the place on their hands, and the latter, instead of giving up in despair, have put their shoulders to the wheel and successfully carried on the business We do not say it out of mere compliment, because the fact remains that, in many cases, the judgment of the wife in farming matters has turned out better than the husband's; and when we see a woman at the death of her better half not shrinking at the responsibilities, but facing the situation and assuming the reins of control on a farm, we emphasise our statement that the lady farmer is a commendable figure in agriculture.

ROYAL LIVE STOCK SHOW.

Jubilee Grounds and Building.

September 12th to 15th, 1906.

Horses in action. Cattle and Sheep. Dogs and Poultry.
Flowers, Fruit, and Vegetables.

Show and Concerts on Thursday and Friday Nights

Admission 1s. Public Reserves, 1s. extra.

JOHN CRESWELL, Secretary.

South Australian Show Dates for 1906

Address.	Name.	Secretary.	Date
Adelaide ...	S.A. Royal Agricultural and Horticultural Sy.	J. Creswell ...	...Sep. 12-15
Balaklava ...	Balaklava and Dalkie...	D. Virgo ...	...Sep. 28
Burra ...	Burra	J. McLaren ...	... " 27
Bordertown ...	Tatrara	J. H. Anderson	... " 26
Caltowie ...	Caltowie	———	...Oct. 10
Clare ...	Stanley	J. Bantley	... " 3
Crystal Brook	North Western ...	Mark Weston	...Sept. 5
Eudunda ...	Eudunda	W. H. Marshall	...Oct. 3
Gawler ...	Gawler	A. G. Wells	...Sept. 19
Jamestown ...	Belalie	R Rowe ...	...Oct. 10
Kapunda ...	Kapunda and Light ...	T. Jepp ...	...Sept. 26
Kadina ...	Yorke Pennsula ...	J. W. Taylor	...Oct. 3
Laura ...	Booyoolie	W. H. Campbell	...Sept. 26
Minlaton ...	Central Yorke Peninsula	T. G. Tickelmann	...Oct. 24
Moonta ...	Moonta	———	...Oct. 10
Mannum ...	Mannum	J. Scott ...	... " 4
Mount Gambier	Mount Gambier ...	B. L. Daniel	... " 17-18
Narracoort ...	Narracoort	D. Campbell	...Sep 20-21
Petersburg ...	Petersburg	J. Willson ...	...Oct. 17
Port Pirie ...	Port Pirie	W. C. Coppenger	...Nov. 6-7
Port Wakefield	Port Wakefield ...	J. Thompson, junr.	...Sept. 21
Snowtown ...	Snowtown	G. Green ...	... " 19
Strathalbyn ...	Strathalbyn	Tucker & Adams	...Oct. 5
Streaky Bay ...	Streaky Bay ...	———	... " 5
Saddleworth ...	Midland	–	... "
Two Wells ...	Two Wells	J. Kingdon ...	... " 4
Tarlee ...	Tarlee and Moonoora	———	... " 10
Woodside ...	Woodside	G. Lanterbeck	... " 12
Yorktown ...	Yorktown	F. Hughes ...	...Oct. 10

The annual show of the South Australian Royal Agricultural and Horticultural Society will be held this month, opening on Wednesday, September 12th, and closing on Saturday, the 15th On Thursday and Friday nights concerts will be held. Following the last good season, this State has been blessed with a record rainfall, and in the country the land looks smiling and gay, so that it is confidently anticipated that the current season will eclipse its predecessor, consequently the same may be said of the coming show. It is generally admitted by visitors, that although the exhibits at the Adelaide Spring Show are not so numerous as those of Sydney and Melbourne, yet in quality South Australia takes first rank in almost every department, and the exhibitors, assisted by the energetic secretary, Mr. J. Creswell, intend doing their best to maintain this reputation in the show of 1906. The prize list is an encouraging one.

Primroses.

THESE beautiful and popular spring flowers are easily raised from seed, and the present is a good time for sowing to obtain plants for next season's flowering. A packet of seed will produce a number of plants which will vary so much in form and color that scarcely two will be alike.

Seed of either primroses or polyanthuses may be sown in the open air, but a far better plan is to sow in well-drained pans or shallow boxes. The soil should consist of loam and leaf-mould in equal parts and sifted through a quarter inch mesh sieve, pressed down and made very smooth on the surface. The seed must be thinly scattered on the finely-prepared soil, and very lightly covered. A good watering should be given with a fine rose pot, and the pan or box will be all the better placed in a cool frame or under a handlight in a shady position, taking care that the soil never becomes dry. As soon as the young plants are large enough, they should be pricked out in other boxes in the same kind of soil or if boxes or pans are not available the young plants may be pricked out in a shady spot in good soil outdoors.

Treated as advised, and kept well supplied with water in dry weather, they will be fairly strong by the autumn, and in the spring will become a mass of color in great diversity. They are also very beautiful grown in pots for the house or window decoration, and for this purpose a few plants may be potted up in well-drained pots, in a compost of two parts loam and one part leaf mould.

Lime in the Garden.

THE importance of lime, chemically known as calcium monoxide (CaO), is generally overlooked, and its powerful aid to the fertility of our soils is unheeded. This should not be so, and the object of this article is to make readers more familiar with it and its work.

Lime in its original combination as calcium carbonate is very familiar to us as chalk, marble or limestone, and it is also the chief constituent of shells, etc. This combination is expressed symbolically as $CaCO_3$, that is, there is one atom of calcium (Ca), one of carbon (C), and three of oxygen (O). To separate the calcium monoxide from the carbon dioxide the carbonate is heated in conjunction with fuel in a kiln, its decomposition ensuing, and lime in a quick or caustic condition is produced.

Although lime in its native combination is beneficial, it is in the quick or caustic form that it is most desirable to have it. To preserve it in its quick condition we must take great care of it, as it very readily unites with its lost partner when it is exposed to the air, reverting back to its original state. To have it in a finely divided condition so as to be mixable with the soil water must be added, with which it combines with great avidity, forming a whitish powder known as slaked lime or calcium hydroxide.

Quicklime being especially eager to reunite again with an acid, it rapidly decomposes the organic matter in the soil, and as organic acids are formed it appropriates them and gradually loses its quick or caustic character. For example, decaying vegetable matter yields amongst other acids, carbon dioxide and the line combining with this from calcium carbonate or carbonate of lime. So one of the first results obtained by the use of lime is to sweeten the soil by neutralising any acid body that may have rendered it sour; another result is to decrease the amount of organic matter in the soil.

This latter result may not always be desirable, although in some soils, such as a peatty soil for instance, it is expedient. To avoid a diminishing of the organic matter the dressing should be of lime in a less quick form as chalk or marl, the action is then slower with regard to the sweetening process, and the decrease of humus is correspondingly lessened.

Quicklime asserts a chemical influence upon the mineral constituents of the soil, converting them from an insoluble condition to a soluble condition and rendering them available for plant use. Thus, when potassium silicate or sodium silicate, or the two felspars of potash and soda are brought under the influence of caustic lime, the potash and soda are partially ousted from their partnership, the calcium taking their place and leaving these valuable alkalies at the service of the plants.

Again, in the soil there exists a class of bodies known as the double silicates. Pure clay of an aluminium silicate, a fertile clay or a loam, an impure clay containing a variety of other substances, and in this latter form the aluminium silicates become combined with the silicates of the alkalies and alkaline earths, forming double silicates. We have the double silicate of alumina and ammonia, alumina and potash, alumina and lime, and of alumina and soda.

These silicates act in a very remarkable way, for if we present lime to the double soda silicate soda is displaced, and the corresponding silicate of alumina and lime formed, so likewise will lime have to give place to the potash and the potash to ammonia, therefore the introduction of quick lime encourages the production of the double lime silicate, releasing the soda for plant use and awaiting its turn to be expelled by potash.

A most important office of lime in the soil—of special interest in these days of artificial manures is the production of nitrate of potash or saltpetre. There was a time when the world's supply of potassium nitrate was artificially prepared, and the method adopted cannot fail to be of great interest to tillers of the soil.

To give a detailed account of the preparation of nitre beds would occupy too much space, but works on chemistry describe the process of nitrification.

Lime itself is a constituent part of a plant, and it is supposed to enter as plant food, in the carbonate form and it will be seen from the above actions, that lime applied to a heavy clay soil will lighten it.

Re-potting Palms and similar Plants

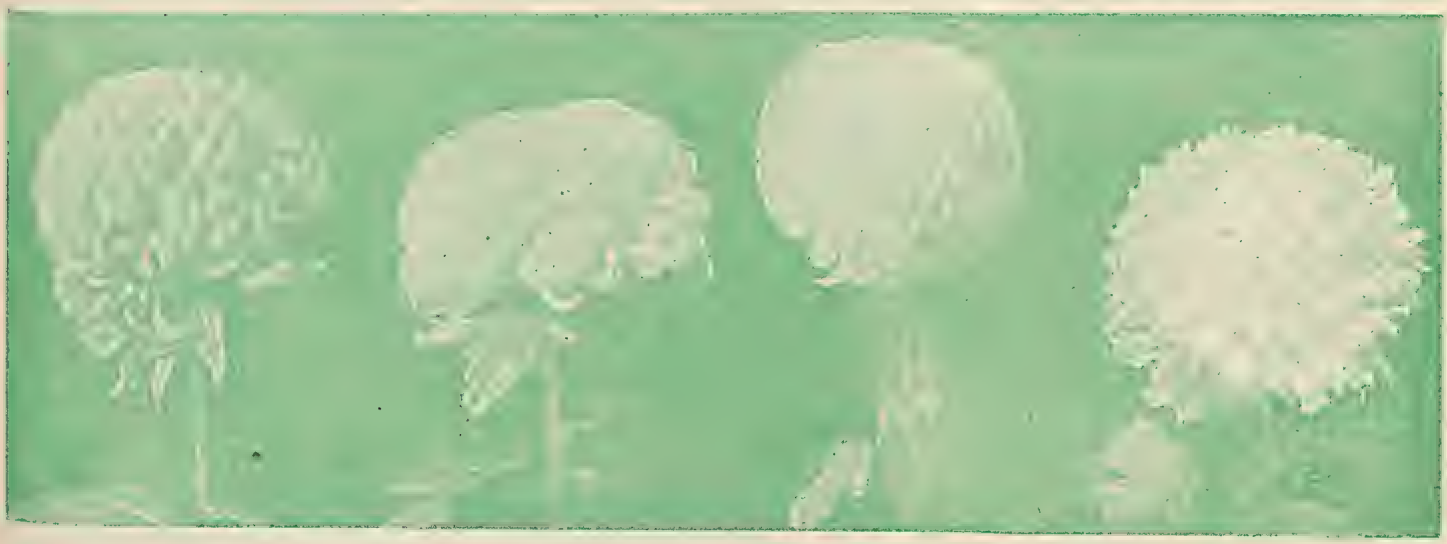
The need to repot these plants only arises when the pots are full of roots or when the soil is sodden and sour. Spring is the most suitable time for repotting plants used for room and table decoration. In a glass house any time but winter is suitable.

A mistake is often made by over potting, that is, using pots too large for the plant. Slow growing plants, like many palms, camellias, etc., should not be transferred to pots much larger than the pots they previously occupied. A move from a pot 5 inches in diameter to one 7 inches in diameter is sufficient.

In potting plants only clean pots should be used, and they should be drained, especially if the plants are likely to remain in them for some time. Moderately light soil, porous in character and of the nature the plants require, should be ready for use. The plant to be repotted should not be dry. After being removed from the pot the old crocks should be taken away, and (if pot bound) the roots carefully disentangled. Some soil should be placed over the drainage material, and the plant placed on the soil a little below the level it occupied in the smaller pot. Soil should be added and pressed firmly between the ball of soil and the pot until the required level is reached. Except in hot weather, the newly potted plant will not require much water for a time, but will be benefited by an occasional syringing over the foliage and extra shade. Pot plants fail often through being placed on exposed stands at some height from the ground.

Peat is the decomposed but yet fibrous remains of vegetable matter which accumulates in some of the swampy places in the hills. Peat soil used as freshly up is highly injurious to many plants, as it contains humic acid which is gradually absorbed by exposure to the air. Some of the dark, black humus found in the same localities, and treated in the same manner, will also be found exceedingly useful for mixing up soil for potting.

Chrysanthemums.



Sophia Algoma Globosa Alba Minnie Bailey

ROSE — "The Bessie Brown"

Keep your ground round the roses free from weeds and the soil loose, to prevent evaporation. Avoid digging near the roots or the young fibres will be injured and your blooms affected. It is a very good practice after watering or rain to lightly stir the ground with hoe or fork.

——

A very effective way of training vigorous growing roses is to select strong shoots and tie them down at regular intervals to a ring of wire surrounding the plant at, say, 5 or 6 ft. from the stem. This gives an umbrella form and causes the buds to break regularly from the base to the end of the shoots. W. A. Richardson, Beauty of Glazenwood, Cloth of Gold and Roses of similar habit, either as tall or low standards, treated in this manner are most effective for garden decoration. All the pruning required is to cut the flowering shoots back when the blooms are done The main branches will last for several years, when they can be replaced by younger growth.

CHRYSANTHEMUMS ILLUSTRATION

SEPHIA (Mrs Trenor L. Park x Nagoya)—An incurved bright yellow, very similar in style to Mrs Park, but is an improvement on that variety, being double under all conditions. Certificate C.S.A.

ALGOMA—A light pink incurved; the style of the Queen. The form and habit are all that could be desired of a commercial variety. Certificate C.S.A.

GLOBOSA ALBA—A very compact, closely incurved Japanese, globular form and pure white, as the name indicates. Certificate C.SA.

MINNIE BAILEY—A beautiful bright pink of the Mrs Perrin type, from which it is a seedling. Not as large as some varieties, but will be a commercial sort for many years to come. Certificate C.S.A.

Look !

Seeds for Present Planting

FLOWER SEEDS—
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The Orchard.

Operations for September.

By W. J. Allen.

The citrus growers of nearly every district are complaining of very light crops, and much of the fruit is only just colouring being much later in ripening than during ordinary years. In the ordinary course of events producers would at the present time have been busy picking, packing, marketing large quantities of these fruits. This year, however, they have had to find other work to occupy their time, and I trust that most of them employed as much of their spare time as was possible in carting either soil or manure in order to assist as far as possible in bringing the trees back into good normal condition. I cannot help but think that there is many an unprofitable orchard in the fruit growing districts which, had their owners been a little more liberal with manure, would still be yielding fairly good returns.

The grafting of deciduous nursery stock should be now nearly completed, and should there be any unprofitable apple, pear or other trees standing in the orchard, these also may be grafted to good varieties. Grape vines are easily grafted just as the buds are well swollen and about to burst. Old peach, plum and apricot trees will be found much harder to graft than either apple or pear trees. If there are any such in the orchard which are unprofitable it would be as well to cut them back and graft to better varieties, and in the event of the grafts not taking young shoots might be allowed to grow and buds inserted either in the summer or fall.

Besides the above work, there is the winter spraying with the salt, sulphur and lime solution, which will kill two birds with one stone, being both an insecticide and fungicide. It answers fairly well in keeping in check the curl leaf of the peach tree: but for this latter disease Bordeaux mixture is even better. Trees treated with either of these solutions will show very little curl.

The lime sulphur, sulphur and salt is one of the best sprays we have for San Jose scale; but where trees are badly infested, it is best to give two sprayings, one in the fall and another in the spring, just as the leaf buds begin to swell and before the trees are in bloom.

For peach aphis the resin and soda is a good useful spray, as is also the blue oil emulsion, but it usually takes several applications to keep this pest well in check.

Another mode of treatment is to dissolve a cake of Sunlight soap in two gallons of water and spray when warm. This is easy to mix, and has given satisfactory results in destroying this pest, and the wash will not injure the blossom, consequently the trees can be sprayed at any time. It is not safe to use other sprays when the trees are in bloom.

At time of pruning, particularly in young apple orchards, a sharp look out should be kept for the appearance of woolly aphis, and should any trees be found infested they should be carefully pruned, removing and burning as many of the infested twigs as possible. Then either scrub the trees thoroughly with a strong kerosene emulsion or fumigate with hydrocyanic acid gas so as to eradicate this pest if possible.

All old bark should be scraped from apple, pear and quince trees, and the scrapings burnt, and everything in the orchard which would be a harbour for codlin moth destroyed.

Keep all fruit-houses as clean as possible as there is no doubt that they are responsible for harboring a great many moths during the year, therefore keep the room as air tight as possible, and as soon as the moths begin to hatch in the spring burn sulphur fumes in the rooms once every other day for a fortnight so that the moths may be destroyed as they begin to fly.

In working round vines keep a sharp look out for the pupæ of the vine moth. If there are any old, partially rotted stakes, the moths will be found adhering to these, and also to the old bark which is hanging to the vine. Crush these when found, and thus assist in keeping down this pest as far as possible.

Growers who intend using quick-acting fertilisers should make the first application this month. It is best not to apply too much at one time, but rather make two applications—one now and one after the fruit is well set.

By Albert H. Benson.

Orange trees require attentive treatment in the matter of Maori or rust. Maori is caused by a very small mite, which begins its attack on the young fruit when it is about the size of a marble, though the injury it causes is seldom noticeable till the fruit begins to ripen. Spraying the trees with a mixture of sulphur and soft soap or with a weak solution of sulphide of soda, or dusting the trees with fine sulphur, will destroy these mites.

A careful examination should be made of all fruit to see if any contain larvæ of fruit fly: and if such are found they should be destroyed, as if extreme care is taken during this and next month to destroy the larvæ of all fruit flies, whenever and wherever found, this great curse of the fruitgrower would be greatly reduced, as it is on the careful destruction of the earlier broods of flies that the saving of the main crop of fruit will principally depend. Though the first damage caused by the flies is comparatively insignificant, they reproduce themselves so rapidly that a few mature insects in the beginning of the season become many thousands before it closes.

The Crown-gall and Hairy-root Diseases of the Apple Tree.

A preliminary report of investigations on the crown-gall and hairy-root diseases of the apple tree has been issued by the Department of Agriculture, U.S.A., for the purpose of calling the attention of apple growers to the different diseases and to interest them in the collection of data regarding the predisposition of varieties to these diseases.

The investigations have resulted in separating what was previously called the apple crown gall into two diseases. The disease now designated as crown gall is a callous-like gall growth following wounds on some portion of the root system of the tree and which rarely occurs above the ground on parts of the trunks or limbs.

The malady now called hairy-root disease is characterised both in seedlings and in grafted or budded trees by a stunted root system, accompanied with an excessive production of small fibrous roots, often originating in clusters from the main or tap root. Galls often occur in connection with the hairy root, but these are the results of wounds rather than a form of the disease.

The apple crown gall is of two types. In one a hard callus is formed on grafted trees at the union of the root and scion, or at any other point of the root system where wounds occur, and the result of extensive inoculation with this type have failed to prove that this disease is of a contagious nature. The second type is a soft form more common on seedlings, occurring rarely on grafted trees. These softer galls resemble those of the raspberry and peach, in that they are soft and often rot off, but it is not certain that they are replaced the following year by a new growth, nor is there any proof that they are of a contagious nature.

Nurserymen are advised to give careful attention to the selection of seedlings for grafting or budding, rejecting all that show tufted or hairy roots, as these will develop into hairy-rooted trees with a very deficient root system. So far as the investigations go the disease is not contagious. It is hoped that in the near future practical means for reducing the percentage of trees affected with these diseases will be known.

Eighty acres of the Rose de Sargeant prunes, in the Bathurst district, produced 1200 lb of dried fruit, for which a ready market was found at eightpence per lb wholesale, which is equal to £40 per acre. The trees are vigorous.

If you want to keep your trees free from scale and other insect and fungus diseases, be energetic in swabbing and spraying with lime, salt and sulphur.

Lime dusted out of a bag is a good remedy for slugs.

The orchardist should be careful in purchasing young trees, and see that they are not only true to name, but all they should be in root, and trunk and branch

A List of Good Apples.

The following varieties have fruited and proved true to name—

Adams Permain.

Tree moderately vigorous, poor crop medium size, conic oblong; striped and splashed with browinsh red; flesh yellow, firm, brisk, subacid, fair flavor, moderate keeper. Blossoms 12th October; ripens middle of April.

Ben Davis.

Tree upright, spreading, vigorous, poor crop, large size, roundish, conical, flattened, yellow, brightly striped with crimson, flesh yellowish, brisk, juicy, fair flavor, good keeper, subject to codlin. Blooms October, ripens May, very showy.

Buncombe.

Tree moderately upright, vigorous, a heavy crop, medium size, roundish, conical, skin yellow and covered on the sunny side with purplish red, flesh tender, juicy and sweet, with a high flavor, subject to water core, free from codlin moth

Blooms in October, ripens early in May.

Cleopatra.

Upright vigorous heavy crop, good even size, in cluster, oblong conic, sometimes oblate, skin thin, lemon yellow, with occasional blush in the sun, flesh white, rich, subacid and juicy, with good flavor, good desert and culinary. ripens evenly, will not hang on tree, good keeper, poor dryer. One of our most profitable apples, fairly free from codlin moth, but subject to bitter pit.

Devonshire Quarrenden.—Tree upright and spreading and stunted: a poor crop, small size, in cluster, oblate and angular: skin shiny red, calyx very downy. flesh white, rich and aromatic: poor keeper, free from codlin moth.

Blooms in October and ripens early in January.

Dumelow's Seedling.

Tree spreading and vigorous, poor crop, large size, roundish flattened, skin greenish, striped with red, flesh, yellow, soft and mealy and inferior: subject to bitter pit and codlin moth.

Blooms about the middle of October and ripens early in February.

Esopus Spitzenberg.

Tree upright, rather stunted, poor crop, medium size, roundish conic skin yellow striped and splashed with carmine, flesh yellowish white, juicy and firm, with rich flavor, good keeper.

Blooms middle of October and ripens towards the end of April. Subject to codlin moth.

Five-crown Pippin.

Tree spreading and vigorous, poor crop of large size, roundish oblate, conic, distinctly five-sided, with five prominent ridges round the crown; skin deep yellow with faint blush when exposed, flesh yellow, firm, rich and juicy, subacid with good flavor, fair keeper and dries well. So far unsuccessful in the Bathurst orchard.

Blooms towards the end of October and ripens about the end of January. Fairly free from codlin moth.

Gravenstein.

Tree spreading, vigorous heavy foliage, large size medium crop, fruit oblate, ribbed, skin yellow with broad stripes of crimson. flesh yellow, firm and of good flavor, poor keeper, readily falls before ripening.

Blooms early in October and ripens about the middle of January. Good early variety.

Hoover.

Tree spreading, vigorous, dense foliage, heavy crop, and large in size in cluster, fruit roundish oblate. skin striped and mottled with reddish maroon, flesh yellow, crisp and juicy, with fair flavor, free from codlin moth.

Blooms about the middle of October and ripens early in February. A handsome variety.

Irish Peach.

Tree spreading, vigorous, heavy crop, medium size, fruit roundish, slightly flattened; skin pale yellow, mottled with red with numerous green dots; flesh greenish white crisp, good flavor; falls readily, but is a poor keeper: subject to codlin moth.

Blooms middle of October and ripens early in January.

Jonathan.

Tree spreading, vigorous, medium crop of large size, roundish conical, skin yellow, almost entirely covered with deep red and sometimes striped with crimson: flesh white, crisp, tender and juicy, with good flavor: almost free from codlin moth. Valuable market vaaiety — drys well, good dessert and culinary and is a fair keeper.

Blooms about the middle of October and ripens towards the end of January.

To be continued.

Sorghum Amber Cane Luberne
Essex Rape
Globe and Long Red Mango
And Paspalum Seed
o o o o

Bone Dust
Bone Super Ammonia
Etc.

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Have a dummy egg in every nest.

Don't market the eggs from a stolen nest.

If they're not good enough for your own table, they are not fit to sell.

Beware of jeopardising your good reputation for the sake of a few paltry eggs.

Why do suburban new laid eggs always bring the highest figures and set the price for all qualities?

It is because they are the product for the greater part of small plants, where there are no stolen nests, and the eggs from which are regularly marketed.

Yet close proximity to your market is not an absolute essential, as is proved by the fact that country breeders who market with regularity get top figures.

And anyone who is careful in respecting the essentials can get paying prices for their hen fruit if they go the right way about it.

In almost every locality there are people (or a lot) above regular market price for a select article.

These are the people you need to cultivate, and who will prove your most profitable customers if treated properly.

Cackle

September.

Warmer weather.

Eggs are cheaper.

Set all you possibly can,

Providing you can rear the chicks,

Or are prepared to advertise the surplus

There is a big demand for chickens,

And their production is a profitable venture.

Only let people know you have them and they will buy.

The weather that produces eggs produces lice also.

Just keep your weather eye open for the little pests.

A little care exercised now will keep your poultry free the best part of summer

And that means a lot, as all experienced poultry men will testify.

As the warm weather will commence to tell in increased setters, there is likely to be a good demand for eggs this month.

We are surprised that more breeders do not cater for the enormous demand for broody hens; they sell at good figures.

And while the up-to-date poultry keeper has learnt to do without by using incubators the amateur must follow Nature's way on account of his limited operations.

The most bewildering fact is that a great many breeders, depending on the natural method, buy up all the available broodies for their own use.

In so doing they rob themselves of a customer for eggs in many cases, where, if they adopted artificial incubation, the hens would be available for the small breeder.

There is something in this that will appeal to all thinking people, and no doubt in the near future we will see our leading breeders offering to supply the broodies instead of buying them up from outside.

Feeding.

Variety,
Regularity,
And cleanliness,
Are the main features
Of successful poultry feeding.

We are often asked for a perfect ration.

Like the best breed, this does not exist,

And if it did, it would not always be practicable to give it.

For instance, suppose our perfect ration consisted largely of corn, what would poultry keepers in wheat centres do.

We advise to feed most the grain that is cheapest in your district: don't feed it entirely, and don't abuse it, but make it the staple.

Where two or three kinds of grain are to be had at similar prices, feed the lot in irregular rotation or mixed together.

Just now it will not do to feed too much maize, as it is fattening and heating, and not at all adapted to exclusive summer feeding.

Yet a little corn, like a little money, is a good thing, and while it is so cheap it is hardly the thing to leave it out altogether.

But if fed too heavily it will affect the egg yield and send the birds into an early, or rather, false moult.

Wheat, oats and millet, with barley (boiled for preference), can now be fed largely with the best of results.

It will pay to remember, however, that the grain given should be but a small proportion of the ration.

The mash, after all, is the main feature, and it can be worked to balance the grain given.

Where the latter is of a fattening nature, such as maize, the mash should contain a good proportion of greenstuff, bran and other non fat-forming elements.

The user will in all cases have to use his own judgment to a considerable extent; the best proof of good feeding is heavy egg production, as it is also the best preventative of over-fat hens.

If your birds are laying well, it would be foolish to alter the ration that is giving such good results. If, on the contrary, they are lagging behind, it behoves you look round for something to shake them up

This will be found, for the most part, in the regular foods, not in the excessive use of spices or stimulants of a doubtful nature.

Vegetable Garden.

Seasonable Notes

By W. S. Campbell.

Every farm should be provided with fruit, vegetable and flower gardens. Those who shirk the work make the excuse that they have no time for that sort of thing: that the general farming work occupies every moment of time. This is a poor excuse. It is a man's duty to provide for the health and comfort of his family, and if he pleases he can grow all the comforts needed, that is, if he has an inclinatien to do so, and should he have no knowledge of gardening he can soon gain all he requires by simply the asking.

Now is a good time to start a garden, if it be only for the growing of a few pumpkins or a few potatoes, and the time occupied in forming the garden need be but a trifle, even to do it well: but instances may be seen by the hundred where the farmers will not take the trouble to put in even a single pumpkin seed.

Asparagus is a good vegetable to grow, and one that gives but little or no trouble after it becomes established. One, two or three year old plants may be planted, provided they have not started into growth. As soon as possible get the soil ready—it should be ready some little time before planting. Trench 2 feet deep, keeping the top soil on the top and the bottom soil at the bottom, for it is but rarely that the bottom soil when brought to the surface is in a suitable condition for plants. To do this easily divide the land to be trenched—indeed the whole of the garden would be the better for trenching—into two parts, or if a large patch, into four. Start work at one end and let it be divided into strips about 3 feet wide. Then take out all the surface soil to about 1 foot in depth and put it in a heap at the end. Then take out the surface soil of the next strip 3 feet wide, and heap this with the soil already taken out Then take out the bottom or subsoil and keep this by itself near the heaps of surface soil, but do not mix it with them. Then dig out the subsoil which was under the second strip and put it into the bottom of the trench made when the bottom soil of the first strip was taken out, and then put the top soil of the second strip on top of this, and so continue to the end of the bed.

When planting asparagus open up a trench (not very deep) and round up the bottom of it. Set the plants on top of the rounded part so that the roots can be spread out evenly and nicely, and then fill up with soil. The depth of the top of the rounded part below the surface of the soil should be so deep only that the tops of the plants will be not more than an inch or two below the soil. If the roots be bundled together and stuck into a hole the plants are not likely to grow very well.

Artichoke, Globe—This is not much of a vegetable, and hardly worth the space it would occupy, but if anyone desires to try it now is the time. Each plant will occupy a considerable space, so that if more than one plant is grown the distance they should stand apart should be at least 4 feet.

Artichoke, Jerusalem — This is really not an artichoke but a kind of sunflower, and it is one of the best and easiest of vegetables to grow, and if too much of this good thing should be raised the pigs will take the surplus with gratitude and thrive well on it. Plant early in trenches 3 or 4 feet apart. Drop the tubers in trenches made about 5 or 6 inches deep about a foot from each other. Cover up and keep down weeds by cultivating well from time to time between the rows.

Beans, French or Kidney—In all the warm districts seeds may be sown, but delay the sowing if cold, frosty weather sets in.

Beet, Red—This vegetable should be grown wherever possible so that a supply may be available. Sow a few short rows from time to time, keep the plants free from weeds and thin them out well. When the soil is being prepared for sowing avoid applying fresh or rank manure. The best plan is to follow cabbage, cauliflower or other vegetables for which a good deal of manure had been used. The best sorts to grow are the short, stumpy and turnip rooted or globe varieties, as they are named.

Salsify—Seeds may be sown now if a trial is desired. Sow in rows about 15 inches apart. The best soil for this plant is sandy loam, and when the seedlings come up they should be thinned out to about 6 inches apart.

Swede—Sow in rows a little seed from time to time to keep up a supply.

Potato—Plant a few rows during the month of any early variety obtainable, and manure, dig and drain the land well. Sow whole potatoes of a medium size, unless the seed is scarce, when they may be cut into sets

Tomato—In warm districts plants that have been raised under shelter may now be planted out, but some protection may be necessary at night, for frosts may come even in warm districts and destroy the plants if unprotected. Seed may be sown to any extent needed, but under protection.

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Beet, Silver, sometimes known as Spinach—One of the most useful vegetables to grow, and the return from a few well grown and well cared for plants should be quite heavy. When preparing land for the plants use abundance of good manure —that is, farm yard manure The seed may be sown in seed beds, and the young beet afterwards transplanted to a bed prepared for them. Half a dozen plants will probably be found sufficient at a time. When the leaves are well grown pull off the inside ones only for use.

Cabbage. Cauliflower, Brussels Sprouts, Brocoli, Savoy, Kale—Sow seed of any of these vegetables from time to time so as to keep up a succession of plants. Very little seed need be sown, for it is no use having an over supply of plants for which no use can be made. Prick out seedlings of above as soon as they are large enough to handle, and plant out any well grown plants which had already been pricked out. Shift these with a good deal of care in order to break as few roots as possible. Should the ground be quite dry when you desire to plant, water the plants to be moved thoroughly, give them quite a good soaking overnight, and if they are watered after planting they will not feel the shift. All the vegetables named require rich soil, and if it be not naturally rich, apply abundance of well rotted (not fresh and rank) farmyard manure. As warm weather may set in it would not be amiss to spread a mulch about the plants.

Celery—A little seed may be sown in seed beds, or, better still, in a box. As soon as the plants can be handled prick them out, and later on transfer to shallow trenches which have been heavily manured. During the time of growth and until they are about to be blanched, the plants will need a great deal of water if the season is dry, as well as some liquid manure occassionally.

Celeraic, or turnip rooted Celery—Manage as for the above, except that the plants need not be planted in trenches. This is a useful vegetable for soups, stews, etc.: its turnip-like roots are used instead of the leaf stalks similar to the ordinary celery.

Carrots—Seed may be sown from time to time to keep a continuous supply going. This is a most useful vegetable and one which the gardener should never be without. Sow the seed in drills about 1 foot to 18 inches apart. Try several kinds, and probably the short rooted will be found the best for general use. If the seed be soaked for a few hours before it is planted and the drills watered, should the soil be dry, the seed will germinate much sooner than if it be sown in a dry condition. As a rule it takes quite a long time to come up, and care must be taken to keep down weeds or the young carrots would become overgrown.

Cucumber — Only in warm localities should sowing seed be chanced in the garden. Young plants can be raised under cover, however, and when frosts are over the young cucumbers can be planted out.

Leek—This vegetable is not much used, but it is a good wholesome one and well worth the growing. Sow a little seed occasionally in seed bed, and as soon as the seedlings are 6 or 8 inches high they can be transferred to the garden. The soil should be made very rich in order to rear good leeks.

Lettuce—Seed may be sown from time to time in order to keep sufficient plants in hand for planting out. Before moving them water well and disturb the roots as little as possible when taking them out of the soil. Water again after planting if the soil is dry.

Onions—Plants already raised in box or seed bed should be planted out by degrees, taking the largest plants first. This method of growing onions is a good one for gardens, and success in growing them is more likely to be attained than by sowing the seeds where the onions are to grow. As onions are largely used for domestic purposes, it is desirable that sufficient be grown for requirements. Use a lot of manure for them, working it well with the soil at time of preparing the land for the plants, or seeds if sowing in the garden is necessary. Keep the onion plants free from weeds and work the land between the rows frequently. Before gathering the bulbs for keeping purposes they should be thoroughly ripe, and this may be seen by their stems dying down. Do not leave them in the sun after they are dug up any longer than can be avoided. The rows should be about 12 inches apart, and the distance from bulb to bulb must depend upon the size which the particular variety is likely to attain when mature. If seed be sown in the garden be careful not to cover it deep. At the outside it should not be covered with fine soil more than a quarter of an inch.

Parsnip — Seed of this deep rooting vegetable should be sown as extensively as may be needed. The land should be worked deep. Old manured land is the best, for if fresh manure be used the parsnips will probably become forked or misshapen.

Peas—Sow as much as may be needed to keep up a continuous supply if possible. The rows may be 3, 4 or more feet apart according to the height the peas are likely to attain. Sow the seed about 4 inches apart and 3 inches deep.

Radish—Sow a little seed occasionally in well manured ground, using well rotted manure: use the radishes while they are quite young and tender. When they become hollow or pithy they should be given to the pigs.

Rhubarb — The directions given for preparing land for asparagus are applicable to the rhubarb. Plant just as the leaf buds are starting into growth, and have the crown of the plant an inch or two below the surface. The trench with rounded bottom for asparagus is unnecessary for rhubarb.

Turnip—Sow a little seed occasionally in rows about 15 inches apart.

The Dairy.

Dairy Notes

The bull is half the herd.

Cull unprofitable cows fearlessly.

Over-ripened cream produces inferior butter.

Rear the calves of rich and copious milkers.

Get to know the cost of production of milk.

All cows are not cows to the progressive dairyman.

The general purpose cow is, as yet, a phantom.

Among cows large eaters are generally large milkers.

A pig should dress out 80 per cent. of his live weight.

In breeding for milk there is a big chance of going wrong by crossing alien breeds.

Study and inelligent efforts are necessary to rise to the high attainments of dairying.

The value of a dairy cow consists in her ability to consume food at a profit.

Know the value of the cow's food and compare it with the value of the milk produced.

Lactic acid causes curdling by neutralising the alkaline salts which keep the casein in solution.

No breed of pigs shows such a marked capacity for early maturing as the small white Yorkshire.

Sell the inferior butter cows and begin breeding and filling up the vacancies with profitable ones.

The dairyman who does not keep up an endless war against dirt will never make the finest quality of butter.

By milking the cow dry not only is the whole of the available milk obtained, but the richest part of it—the strippings—is secured.

A mixture of equal parts of salt and charcoal is a good stomach corrective for pigs, and should always be kept available for them.

Most cows will let down their milk better if allowed to feed during milking.

Milk testing forms the only accurate and safe basis for judging the merits of a dairy cow.

The milking habit is an artificial development or function which has by no means reached its zenith.

All experience seems to show that the best results are obtained when churning is done at a low temperature.

The value of keeping records of quality and quantity of milk produced by individual cows is almost inestimable.

The careful and intelligent Dane secures as much milk from one cow as the average Australian dairy farmer procures from two.

Dairying is made more attractive to the family by the adoption of cleanly methods and the provision of proper milking sheds and yards.

Aerating milk frees it from the odours absorbed in the milking shed or from food eaten by the cow, while cooling is beneficial because it retards the growth of bacterial life.

Failure to catch the public taste has followed the attempt to produce butter with the mild flavor that results from pasteurisation and the use of pure culture. The taste for some modicum of salt is almost universal.

Clean, fresh water is essential to robust health in pigs as in other animals: without, the stomach and intestines cannot be held in proper digestive tone, and the fullest value is not got out of the food.

In Sweden the dairy experts who travel about the rural districts giving practical demonstrations in dairy work and affording advice to those desiring it, are employed by the provincial authorities or local societies.

Fourteen years of the practical use of payment by results on the milk test have shown the absolute fairness, simplicity and accuracy of the method.

Stated that very few, if any Australian butter factories ever use more than eight ozs of preservative per cwt in butter made for export—that is, ½ per cent.

No matter what the climatic conditions may be, all things considered, there is no use to which land can be so profitably applied as dairying and its various branches.

In districts and at factories where difficulty is experienced in choosing butter of uniform quality owing to weedy and rank pastures or other causes, the remedy is pasteurisation.

One reason of butter taking a long time to "come" is that the temperature is too low, and the cream will not churn until it has been raised by the concussion of churning up to the proper point.

The capacity of the Australian soil and climate for intensive dairying is undoubted, but unless these advantages are backed up by intelligent and determined effort on the part of milk producers the progress will not be rapid.

When cream is churned too warm the larger fat globules unite so rapidly that the granules of butter are formed before the smaller globules have been collected, and as a result the loss in the butter milk is more than it should be.

The condition of the dairying industry in most of the Australian States is that, even under the most adverse conditions of seasons, it can be relied on for a large and valuable export trade, and its possibilities under favorable conditions cannot be over estimated.

The cause of fluctuation in the supply of butter for export is invariably the result of a sudden variation in the supply of feed for the cows, owing to want of management on the part of the dairy farmer in neglecting to provide cultivated fodder for their herds during times of scarcity of the natural pasture.

An almost unfailing indication of the easy milker is flat ends to the teats. Cows with pointed ends to the teats with hard because the outlet is usually small and much forcing is required to squeeze out the milk.

Among the teaching institutions in Sweden receiving support from the Government are two dairy schools in the north and eighteen model dairy stations for the training of dairymaids.

Thousand-Headed Kale.

A Tasmanian correspondent writes—With the advance in the production of fat lamb raising for export, any reference to a fodder plant likely to prove useful to sheepbreeders in general, or to those more closely associated with the production of lambs for market, should be useful. Kale is gradually finding its way to the front rank solely on account of its great worth as one of the best plants for fattening purposes. The preparation of the land is similar to that for rape, and the larger the amount of labor put into the land intended for the growth of kale, the greater will be the amount of food produced.

Always bear in mind that heavy croppers, whether it be mangold, rape, carrots or kale, require plenty of manure if you want the best results.

Kale if well cultivated and manured has proved its worth. I have seen it well on to its second year after planting with sprouts as good as ever, having been cut off and fed to sheep the first time and then fed off by sheep for quite twelve months afterwards. The system of seeding was with a drill, each row of seed being 3 ft apart and the plants thinned out with a hoe to 18 inches.

Plenty of stable manure was used on the land, and the horse hoe kept going until the plants were about 18 inches high.

I saw some of this kale cut to feed sheep quite 4 feet 6 inches long, and they ate every part of it.

I have seen a 30-acre paddock put in with the horse drill, on which nitro superphosphate was used as heavy as the drill would pass it 2½ lbs of seed costing 2s 6d per acre, being mixed with the manure, the seed drills 3 ft apart. The crop of plants is rather thick, but the horse hoe passed across the rows will make a fine paddock of feed and give room for cultivation where necessary.

Kale alone, unlike rape, will not scour the sheep, fattens readily, and is a grand milk producing food for cows, and once established stands the dry weather well—comes again after every rain.

Once tried, no sheep breeder would be without it.

Frost does not affect it, and it is often at its best in winter time Sow in spring time, and it will be ready when other feed is fading away.

Those who read these lines may think the trouble too much, but try a little quarter acre plot; it will convince you that what you have read is reliable information.

Corns on Horses' Feet.

Corns in horses are not excrescences, but are due to bruising of the angle of the sole by the heel of the shoe, and what is wanted is not ruthless paring, but the prevention of further injury. Hunting in his "Art of Horse Shoeing," says:—"A corn, be it remembered, is not a tumour or growth; it is merely a bruise of the sensitive foot under the horn of the sole. It shows itself by staining the horn red, just as a bruise on the human body shows a staining of the skin above it. To 'cut out a corn' with the idea of removing it is simply an ignorant proceeding If a corn be slight, all that is necessary is to take off the pressure of the shoe and this is assisted by removing a thin slice or two of the horn at the part. When the injury is very great, matter may be found under the horn, and, of course, must be let out by removal of the horn of it. Provided there is no reason to believe that matter has formed a corn—that is, the bruised and discoloured horn—should not be dug out in the ruthless manner so commonly adopted. Cutting away all the horn of the sole at the heels leaves the wall without any support. When the shoe rests upon the wall it is unable to sustain the weight without yielding, and thus an additional cause of irritation and soreness is manufactured. The excessive paring of corns is the chief reason of the difficulty of getting permanently rid of them. The simplest device for taking all pressure off a corn is to cut off 1½ inches of the inner heel of the shoe. With the three-quarter shoe a horse will soon go sound and its foot will then resume its healthy state. The saying 'once a corn always a corn' is not true, but it is true that a bruised heel is tender and liable to bruise again, from very slight uneveness of pressure, for, at least, three months. All that is necessary is cure in fitting and abstention from removal of too much horn from the part."

Whitewash that will not rub off.

A first-class whitewash is made by dissolving 2 lbs. of ordinary glue in 7 pints of water, and when all is dissolved adding 6 ozs. of bichromate of potassium, dissolved in a pint of hot water. Stir the mixture up well, and then add sufficient whiting to make it up to the usual consistency, and apply with a brush in the ordinary manner as quickly as possible. This dries in a very short time, and by the action of light, becomes converted into a perfectly insoluble waterproof substance, which does not wash off even with hot water, and at the same time does not give rise to mould growth, as whitewash made up with size often does. It may be coloured to any desired shade by the use of a trace of any aniline dye or powdered colouring, while by the addition of a small proportion of calcic sulphite its antiseptic power is much increased.

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The Australian Gardener

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Flower Garden.

By The Observer

For October

With plenty of moisture in the soil, warm air, and plenty of light, everything should grow rapidly. There will be lots of feed for the garden pests, and there will be a deal of work in repelling their attacks. A penny for postage will secure from the Department of Agriculture a reliable leaflet giving instructions how to deal with most of the fungus diseases and many of the insect pests. Slugs and snails can be destroyed with freshly-slacked lime, or with soot, sprinkled over the beds at night, or they can be trapped under handfuls of weeds or under boards raised about half an inch, especially if the underside has been smeared with dilute iodine.

Take advantage of moderate. cloudy weather to plant out seedlings of tender annuals, including variegated beets, kales, and similar plants for autumn color. alternantiears. ameranths, antirrhinums, browallias, cannas. chillies, and all other peppers, celosias, carnations, centaureas, convolvulus, delphiniums, dianthus species of all sorts, echiums, egg plants, everlastings of many kinds, gaillardias, gomphrenas, ipomoeas, iresenes, lobelias, lupins, nicotiana, petunias, perilla, stocks of many varieties, French and African marigolds, cosmos, zinnias, and many others. If no seedlings have been raised the seedsmen and nurserymen can supply several sorts.

The benches of the greenhouse are often too crowded with plants, so that air and light cannot freely get among them, and they grow up thin. lanky and weak. To avoid this state of things plant out a lot of the surplus in the open beds. If the soil is good, and enough water is supplied a good many of the plants usually grown in greenhouses will thrive in the open air garden as will be seen when one visits the Botanic Garden.

Sow small lots of seeds of all kinds of ender and half-hardy annuals and autumn decorative plants. When flowers begin to fail their scarcity can be partialy compensated by the gorgeous colors of the foliage of the various amarants, beets, coleus, colosias, kales, contaureas, triplex varieties, iresenes, alternatheras, echiums, echeverias, and others. Many varieties and species of cucurbitaceae (including gourds, calabashes, etc.), bearing remarkable fruits of various bright colors and odd shapes, can be grown for hiding fences walls, etc., or for covering arbours or summer houses. Sturt's pea may still be sown.

In beds of rich, deep, sandy loam, sheltered by walls on north and north-west sides by good walls, many desireable plants can be grown, but which withstand the hot winds or fierce heat of our summer afternoons. Among the plants that can thus be grown are Anemone japonica, asters, aurieulas, bolsam, bellis parennis (daisy), begonias (tuberous and others), cinerarias, camellias, capsicums, chillies, and other peppers, coleus, dupheas, cyclamen, daphes, deutxiax, ericas, epacris (various), fraxinllas, fuchsias, humeas, hellebores, linums, mimuli, nemophilas, pansies paeonies. polyanthus, schizanthus, tagetes, snowdrops, tulips, tritonias, and many British cottage garden favorites.

By careful management the garden may be kept supplied with many of the chief favorite flowers for a long time. By sowing small quantities of seed at intervals of ten to fourteen days, a succession for planting out may be secured. Gladioli corms and various bulbs, tubers, and roots can be planted in the same way, so that when one lot has done flowering the next lot will be coming out. By cutting flowers directly they are full blown, or preventing them seeding, another crop of bloom will in many cases be forced. By judicious cutting back when the flowers begin to wither a fresh crop can be secured. Zonala pelargoniums usually flower about ten weeks after the plants have been cut back, and the other pelagoniums will sometimes start flowering again if the first crop has been cut directly the petrals fall. Roses should not be allowed to produce seeds, but should be cut back lightly when the new wood has hardened, and then old cowyard manure spread on the soil near the stem, but not against it, and plenty of water given. This treatment will start new growth and fresh flowers. Do not in any case, cut the foliage of bulbus or tuberous plants, as that will weaken the plant for next season's work.

There are several plants which do best when planted whilst the soil and air are past all danger of cold snaps. During this month, therefore, plant out oranges, lemons, pine trees, bougainvilleas, bouvardis, clematis, passifloras, dahlias, cannas, salanums, tacsonias, hibiscus, verbenas, helichrysunrs, helliotropes, salvias, and others which seem to thrive best during hot weather, if sufficient water is supplied.

Dahlias should be planted in rows in deep, rich, light soil. with strong stakes on both sides at each end, so that wires can be affixed on either side to protect the sappy growth at the top of the growth, else the stems will probably be snapped off. Foxgloves, hollyhocks. paeonies and all other brittle longstemmed flowers should be staked.

Take up. divide and replant (if not already done) chrysanthemums and other plants of a similar habit of growth, if the plants are rather too large. Fresh spots should be selected for replanting. If bulbous plants continue too long growing after flowering owing to the excess of moisture in the soil the ripening may be hastened by forking beneath them to loosen the roots a little, then leave them until the leaves are quite dry. When dry lift the bulbs, put them away in dry sand for three months before replanting. The little bulbilles about the roots of gladioli and similar plants should be replanted at once in a box that has a lot of fresh stable dung at the bottom, covered with a foot depth of fine sandy loam.

Sweet peas, stocks, and many similar plants are eaten by sparrows, but slugs and snails often get the blame. To prevent the birds eating seeds or seedlings stick a number of twiggy branches about a foot high along the rows and twine a reel of the finest black cotton about the twigs. The birds will strike the cotton and take fright and fly off.

Renew bare places on the lawns by breaking up the soil, dig in some cowdung, and plant with couch or buffalo grass. If the grass is pale coloured, supply some kainit, if not luxuriant enough mix about 6 lb of sulphate of ammonia, 25 lb each of kainit, and superphospate, and apply about two quarts of each 20 ft square of grass. It is better to give a little often than to put on a lot once. Give a lot of water and mow often.

The Shadehouse.

All pots should now be plunged in beds of sawdust, by preference, or sand, and should be lifted and turned at short intervals to stop the roots getting through the drainage holes at the bottom. If the beds are crowded some of the least valued should be removed to the open-air beds. Bring any surplus from the greenhouse here, and remove to the greenhouse any plants which are about to blossom. Under shelter of the greenhouse, in specially prepared beds, all of the British cottage garden favorites can be grown, such as primulas, daisies, fuchsias, camellias, pansies, etc., and on rock mounds can be grown most of the hardy ferns.

The Greenhouse

Azaleas, cacti, cinerarias, ericas, hyacinth fuchsias, pelargoniums, petunias, and other plants in flower should not have too much water, and yet must have enough to keep them growing. If unduly stimulated the plants will go off blooming too quickly. When the blossoms begin to wither cut them off, and it is probable that later crops of flowers will be produced. To maintain a cool, moist condition within the pots pack the interstices with moss or sawdust or seaweed or spent tan bark. All plants about to flower in the shadehouse should be brought here to make a good show: but each plant must have plenty of room for admission of light and air

It is an interesting occupation to raise new varieties by cross-fertilization. A camel hair brush, fine-pointed forceps, and long thin-pointed scissors will be found useful for the work. Directly the petals of the flowers begin to open take the forceps and open the flowers to be treated remove the pollen-bearing parts, and when the petals have expanded, naturally, lift some pollen from the flowers selected for male parent with the brush, and apply it to the centre of the emasculated flowers; then tie a piece of worsted to the stems of the treated flowers, and wait for the seeds to be produced. Only the best plants should be selected for cross-fertilization. Do not save old primula or cineraria plants, because much better plants can be raised from seed for next season

Soft-wooded plants may be stimulated with weak liquid manure before flowering, but when the buds are about to break only enough water should be supplied, and no other stimulant. Hard-wooded plants will throw off their flower buds if too much water is given and will be injured if manure is supplied, The only stimulant that is safe is peat, humus, or leaf-mould. Healthy, vigorous, growth can only be secured by admission of light and plenty of light fresh air, and proper attention to watering and to the soil; but the light must not be admitted through glass directly upon the foliage else it will be scorched; air must not be too strong nor too hot or cold or in the form of a draught. Climbers should not be allowed to exclude too much light, and they may be taken down, pruned, trimmed and refixed.

Fuchsias and hydrangeas take more water than most plants, but should not be flooded nor should the pots be stood in water. There may be some weak liquid manuae at the roots. Cinerarias, too, may have some liquid manure.

All kinds of insect pests may be expected, and it will be safe to at once fumigate or spray all the plants, but remove calceolaris if smoke is used. Caterpillars had better be looked for, especially, because they may escape the treatment. They often eat out the buds of pelagoniums that the flowers never appear. Their presence can be detected by the pellets dropped or by the folded-up edges of the leaves or by perforations on the leaves of the plants.

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Vegetable Garden.

Operations for October

W. S. CAMPBELL.

During this month, as a rule, warm days set in, and towards the end of it summer may be said to begin; the growth of plants is extremely active, for the soil absorbs a considerable amount of warmth. Should dry weather prevail, vegetables and garden plants are likely to suffer, and unless ample supply of water can be given for their requirements many may die away. But if the ground has been trenched and well dug and well supplied with animal dung, waste straw, leaves, etc.—that is, plenty of vegetable matter—it may be quite possible to raise vegetables by good cultivation and the use of a thick mulch and any waste water from the house available.

Asparagus.—Plant this early in the month; but if the necessary plants are ready and to hand, they had better be set out as soon as possible, and the planting is over and done with for years.

Bean—French or Kidney.—Sow a raw or two twice or three times during the month, in drills about 2 ft. 6d in. or 3 feet apart for the dwarf varieties, and about 4 feet or more apart for runners. Sow the seeds about 4 in deep in rows, and about 5 in. apart. One of the very best of the dwarf-growing varieties is the Canadian Wonder, which has held its own against many new-comers for years.

The following are worth a test:—

Climbing French Bean — Sutton's Tender and True.—A first-class French bean in every respect, somewhat similar to the above, fleshy and tender. Seeds, vermilion in colour.

Climbing French—Sutton's Earliest of all.—A good type of climbing bean, very early, and a very early bearer. Hight, 4 feet. Seed, white.

Runner Bean—Sutton's Abundance.—A tall runner bean of high merit, a sturdy grower, and a good cropper. The pods are long, fleshy, and tender; 8 to 12 inches in length, and 1 inch in breadth. Stands the heat well, is a fine show variety, and a great acquisition. Seed, white.

Runner Bean—Sutton's Epicure.—A first-class climber and heavy bearer. Very fleshy pods. Only slightly affected by the extreme heat of the summer. Very distinct. Seed, brown.

Scarlet Runner—Sutton's A1, Scarlet, Best of All.—Seed, speckled. Are three types of first-class runner beans; have evidently been selected from stock of the highest grade; in fact they are so good that it is almost impossible to say which which is the best. They are all heavy bearers, and deserve a place in every garden.

Runner Bean—Sutton's Sugar.—A good climber; very prolific, and stands the heat well. Seed, white.

Dwarf French—Sutton's perfection.—A very early variety, and an enormous bearer. Very fleshy, and of good quality. Seed, speckled.

Dwarf French—Sutton's Plentiful.—A sturdy grower, and an enormous bearer of good quality. It is almost sure to become a favorite with market growers, and also with private growers whose garden space is limited. This variety and Perfection are two of the heaviest bearers in cultivation. Seed, light brown.

Dwarf French — Sutton's Monster Negro.—Although not such a heavy bearer as the above, it is one of the very best for private growers, or with those with whom high quality is the main object. It is a very robust grower, and the pods are long, very fleshy, and excellent flavor. The plant requires to be grown from 10 to 12 inches apart Seeds, black

Dwarf French—Sutton's Triumph,—To all appearances a very good variety. Seed, brown

Bean, Lima.—Sow in all warm localities, or where ever there are not likely to be any late frosts. A very good variety is King of the Garden

Beet, Red—Sow seeds about 1 inch deep, in drills about 18 inches apart, from time to time during the month. Thin out the seedlings well as soon as they have made two or three leaves. The beets thinned out may be planted in another bed, but they must be taken up carefully.

Beet, Silver.—This is one of the best of vegetables for summer. Sow a little in a seed-bed, and transplant when the seedlings are large enough to shift. Not many plants are likely to be required.

Cabbage.—Sow a little seed from time to time, and only sufficient to produce enough plants for small plantings. It is better to plant out small quantities occasionaly than a large batch at one time. Make the soil very rich with good, rich, well-made manure—not too rank—and cultivate between the rows frequently. Frequent cultivation will do an immense amount of good to the cabbage, the cauliflower, and all the rest of this class of plants.

Cauliflower.—In the cool districts plant seedlings or plants that have been pricked out, and keep the cauliflowers growing without check from start to finish.

Carrots.—Sow a few rows, in drills, from 1 foot to 18 inches apart; cover the seed very lightly with fine soil.

Celery.—Sow a little seed in box or small seed-bed, and plant out good-sized seedlings which may be ready; manure well, and plant in shallow trenches. It is a waste of time and quite unnecessary to dig out deep trenches for celery, for it can be managed just as well—if not better, certainly much easier—when planted in very shallow trenches, and it is only necessary to make quite shallow trenches to allow of the plants being easily watered, or for the application of liquid manure. Try the best of the self-blanching varieties, and these can be completely blanched with but little trouble.

Choco.—Some vegetable-growers like this vegetable, which grows somewhat like a pumpkin or cucumber, but needs trailing up wire-netting or fence, or some good support to enable it to grow to the best advantage.

Cucumber.—Seed may be sown extensively in all warm localities. Young plants raised for the purpose may be planted out, and they will soon make progress. Manure the soil well before sowing or planting. As the vines extend pinch the ends, and this will induce growth of laterals.

Endive.—Sow a little seed, and plant out any seedlings that are large enough to handle, just as you would lettuce.

Leek.—Sow a little seed from time to time, and plant out from previous sowing. Sometimes if the weather is very dry leek is difficult to grow during the summer. To obtain the best results it should be grown without a check by using abundance of water and a good deal of liquid manure.

Melons (Rock and Water).—Sow seed in all warm localities as extensively as may be required.

Okra.—Sow a little seed in warm places, and afterwards transplant the seedlings to well-manured ground. They should stand about 2 feet apart. This plant is sometimes made use of for ornamental purposes in flower gardens, for it is very pretty when in full bloom.

Onions.—Be sure to grow some onions, for they are very useful indeed, and if good keeping kinds, such as the Brown Spanish, be grown, a supply can be kept for a considerable time in the house. If onions have already been raised in a seed-bed they should be transplanted without delay. The soil should be made rich and the surface fine where seed is to be sown.

Parsnips.—Sow a few seeds in well-dug land. The digging, or trenching, which would be better, should be deep, for the parsnip is a deep rooting plant, and needs the soil to be well worked, especially if the soil below the surface is at all stiff.

Peas.—Sow a row or two from time to time during the month.

Pepper or Capsicum.—Sow seeds in a warm spot and plant out seedlings when large enough. If plants have already been raised, plant out in all warm localities. Probably one or two plants will suffice for a small family.

Potato.—Plant extensively of this useful vegetable. Select clean, smooth seed, and try several varieties to test their suitability for the climate, soil, and situation. Manure freely, plant about 5 or 6 inches deep, and cultivate the land frequently between the potatoes as soon as they appear above the ground. They should be planted from 2 ft. 6 in. to 3 feet or even more apart if the ground is very rich.

Pumpkin.—Sow a few seeds in well-manured land. Do not manure in the holes, but spread and dig in the manure all over the space where the pumpkins are to grow.

Rhubarb.—Plant out early in the month and obtain some of the winter varieties in addition to the summer kinds. If plants for future use are likely to be required, sow a little seed, and in a year or two these should be quite large enough for planting out.

Tomato.—Sow seed in the open ground in all warm districts of the State. Already in the warmest parts tomatoes are growing satisfactorily, and will soon be producing flowers and fruit. At the Wollongbar Experimental Farm, on the Richmond River, the gardener, Mr. King, tested several varieties of tomatoes for me. He found Dwarf Champion to be an excellent one, and well worth growing. The older and well-known Matchless he found to be wonderfully good in the district, as it seems to be in other places. This tomato Mr. King considers to be one of the best to grow. For his tomatoes he applies liquid manure three times a week—twice with sulphate of potash, half ounce to the gallon of water, and once with nitrate of soda, one ounce to the gallon of water.

Vegetable Marrow.—Sow in same way as advised for pumpkin.

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Orchard Notes.

By W. J. Allen.

At the time of writing, citrus trees are looking anything but well in most of the districts

It is well to make early arrangements for the fighting of the codlin moth, and while arsenite of soda has proved to be much superior to the Paris green for fighting this pest, it is now claimed by many in America that arsenate of lead is even better than arsenite of soda.

First Spraying,

Use 3 lb. of arsenate of lead to 50 gals. of water. The application should be given just as soon as most of the petals have fallen.

Second Spraying,

To follow about three weeks after the first, using 2 lb. of arsenate of lead to 50 gallons of water. Subsequent sprayings may be given at intervals of every four weeks if the moth is bad, using about 1½ lb. of arsenate of lead to 50 gallons of water. This spray is recommended by G W. H Valch (Californian Fruit-grower)

In spraying trees with this or any other spray, see that a good pressure is kept up, so that the pump will throw a good fine mist, and be particular to cover the inside and outside of the tree, as well as the whole of the fruit

It is claimed by some of the Californian fruit-growers that 1 lb. each of lime and sulphur to 4 gallons of water is equally as good if not better than the lime, salt, and sulphur spray, and experiments have proved that the former spray is quite as effective in keeping the San José scale in check, and is much easier to handle. We have tried this spray in our orchard with very satisfactory results; but in order to make it adhere to the trees we boil it for about four hours, using a 200-gallon tank for the purpose. The sulphur should be mixed up like mustard before putting it in the tank preparatory to boiling.

Bordeaux mixture will be found the best spray at this time of the year for all fungus diseases. Never spray any trees or vines while they are in bloom, else the chances are that the crop will be destroyed They may be sprayed a week before coming into bloom, and a week after the fruit is set.

A List of Good Apples.

The following varieties have fruited and proved true to name. So as to make the list complete in the one issue, we republish the part which appeared in our last.

Adams Permain.

Tree moderately vigorous, poor crop medium size, conic oblong; striped and splashed with browinsh red; flesh yellow, firm, brisk, subacid, fair flavor, moderate keeper. Blossoms 12th October; ripens middle of April.

Ben Davis.

Tree upright, spreading, vigorous, poor crop, large size, roundish, conical, flattened, yellow, brightly striped with crimson, flesh yellowish, brisk, juicy, fair flavor, good keeper, subject to codlin. Blooms October, ripens May, very showy.

Buncombe.

Tree moderately upright, vigorous, a heavy crop, medium size, roundish, conical, skin yellow and covered on the sunny side with purplish red, flesh tender, juicy and sweet, with a high flavor, subject to water core, free from codlin moth.

Blooms in October, ripens early in May.

Cleopatra.

Upright vigorous heavy crop, good even size, in cluster, oblong conic, sometimes oblate, skin thin, lemon yellow, with occasional blush in the sun, flesh white, rich, subacid and juicy, with good flavor, good desert and culinary, ripens evenly, will not hang on tree, good keeper, poor dryer. One of our most profitable apples, fairly free from codlin moth, but subject to bitter pit.

Devonshire Quarrenden—Tree upright and spreading and stunted: a poor crop, small size, in cluster, oblate and angular: skin shiny red, calyx very downy; flesh white, rich and aromatic: poor keeper, free from codlin moth.

Blooms in October and ripens early in January.

Dumelow's Seedling.

Tree spreading and vigorous, poor crop, large size, roundish flattened, skin greenish, striped with red, flesh, yellow, soft and mealy and inferior: subject to bitter pit and codlin moth.

Blooms about the middle of October and ripens early in February.

Esopus Spitzenberg.

Tree upright, rather stunted, poor crop, medium size, roundish conic, skin yellow striped and splashed with carmine, flesh yellowish white, juicy and firm, with rich flavor, good keeper.

Blooms middle of October and ripens towards the end of April. Subject to codlin moth.

Five-crown Pippin.

Tree spreading and vigorous, poor crop of large size, roundish oblate, conic, disltinctly five-sided, with five prominene ridges round the crown; skin deep yellow with faint blush when exposed; flesh yellow, firm, rich and juicy, subacid with good flavor, fair keeper and dries well. So far unsuccessful in the Bathurst orhcard.

Blooms towards the end of October and ripens about the end of January. Fairly free from codlin moth.

Gravenstein.

Tree spreading, vigorous heavy foliage, large size medium crop, fruit oblate, ribbed, skin yellow with broad stripes of crimson, flesh yellow, firm and of good flavor, poor keeper, readily falls before ripening.

Blooms early in October and ripens about the middle of January. Good early variety.

Hoover.

Tree spreading, vigorous, dense foliage, heavy crop, and large in size in cluster, fruit roundish oblate, skin striped and mottled with reddish maroon, flesh yellow, crisp and juicy, with fair flavor; free from codlin moth.

Blooms about the middle of October and ripens early in February. A handsome variety.

Irish Peach.

Tree spreadiug, vigorous, heavy crop, medium size, fruit roundish, slightly flattened; skin pale yellow, mottled with red with numerous green dots; flesh greenish white, crisp, good flavor; falls readily, but is a poor keeper: subject to codlin moth.

Blooms middle of October and ripens early in January.

Jonathan.

Tree spreading, vigorous, medium crop of large size, roundish conical, skin yellow, almost entirely covered with deep red and sometimes striped with crimson: flesh white, crisp, tender and juicy, with good flavor: almost free from codlin moth. Valuable market vaaiety — drys well, good dessert and culinary and is a fair keeper.

Blooms about the middle of October and ripens towards the end of January.

Munroe's Favorite,

Tree upright, vigorous, poor crop, medium size in cluster, roundish conical, pointed; skin rough, deep lemon yellow flesh yellowish, coarse and firm, sugary and juicy; drys well, fair keeper and excellent cooking; free from codlin.

Blooms middle of October and ripens about the end of February.

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Newtown Pippin.

Tree upright and vigorous, poor crop, medium size in cluster, roundish, slightly conic and obscurely angular: skin yellow with numerous grey dots, very russet round the base, flesh greenish white, firm and crisp and of a highly aromatic flavor; subject to bitter pit, free from codlin moth and a good keeper.

Blooms about the 10th of October and ripens early in May.

Nickajack.

Tree spreading, vigorous, poor crop of large size, roundish oblate and slightly conic, skin yellow and thickly striped with red, flesh yellowish white and crisp with a brisk and pleasing flavor, a good keeper and free from codlin moth.

Blooms early in October and ripens about the middle of April.

Perfection.

Tree upright vigorous, medium crop of large size oblate, pointed somewhat; skin rough yellow and striped and splashed with red and markings of russet; flesh yellowish white and with strong aromatic perfume, drys moderately well and a good keeper, subject to codlin moth.

Blooms about the middle of October and ripens very early in March

Red Astrachan.

Tree spreading, vigorous, poor crop of large size, roundish and angular, mostly shaded with bright red, having a faint bloom, flesh white, crisp, brisk and juicy with little flavor; free from codlin moth; poor keeper.

Blooms near the middle of October and ripens very early in January.

Ribston Pippin.

Tree spreading and vigorous, poor crop of large size, roundish, conical and oblate, skin greenish yellow, faintly striped and shaded with dull red on the sunny side, numerous grey dots; flesh yellow, brisk, subacid, highly flavored; moderate keeper; free from codlin moth.

Blooms early in October and ripens about the middle of March.

Rome Beauty.

Tree upright and vigorous. heavy crop of large size, roundish oblate and slightly conic; skin yellow, striped and mottled with red; flesh yellowish, white. firm, juicy, sweet, with rich aromatic flavor; good keeper and drys well; hangs well on tree and ripens evenly; apparently the most profitable apple in the orchard as it is both good for dessert and cooking.

Blooms near the end of October and ripens early in May.

Rokewood.

Tree spreading and vigorous, with heavy crop of medium size, roundish conical; skin yellow, shaded with red and mottled with russet; flesh yellowish, solid, brittle, juicy, acid with moderate flavor; a good keeper and free from codlin moth.

Blooms about the middle of October and ripens in the middle of May.

Scarlet Nonpareil.

Tree stunted and spreading, poor crop of small size in cluster, roundish, conic; skin yellowish, streaked with red, numerous russet dots and patches; flesh yellowish and white, juicy and firm, with a strong flavor; moderate keeper.

Blooms about the middle of October and ripens towards the end of April,

Scarlet Permain.

Tree upright and vigorous, medium crop of large size, conical, pointed; skin striped and splashed with lively red; flesh yellow, juicy, acid; good keeper and free from codlin moth.

Blooms middle of October and ripens about the end of January.

Stone Pippin,

Tree upright and spreading, vigorous, heavy, knotty and hard growth: heavy crop of large size, roundish, slightly conical; skin greenish yellow with an occasional blush in the sun, numerous russet dots; flesh greenish white, firm and brittle, juicy, subacid: one of the best cooking apples: subject to codlin moth.

Blooms about the middle of October and ripens late in April.

List of Peaches.

High's Early Canada.

Fruit large, skin yellowish white, with broken stripes and markings of crimson: flesh greenish, tender and melting; freestone.

Ripens about the end of November.

Briggs' Red May.

Fruit not of the largest, roundish; skin whitish green in the shade, bright red in the sun; flesh tender, very juicy and rich; this peach does not ripen evenly, being soft on one side and hard on the other; freestone.

Ripens early in December.

Early Rivers.

Fruit medium, color pale straw; flesh melting with a rich racy flavor, easily bruised; heavy cropper; freestone.

Ripens about the middle of December.

Early Crawford.

Fruit large. oblong. with a swollen point, skin rich yellow with fine red cheek; flesh yellow, very rich and sugary; a heavy cropper; a very desirable dessert peach also for jam, drying and canning; freestone.

Ripens early in January.

Royal George.

Fruit large and quite round and even: skin pale yellowish white and almost covered with fine rich red; flesh whitish and very tender and juicy; heavy cropper and excellent for table; freestone.

Ripens about the middle of January.

Elberta.

Fruit very large and oblong; skin fine yellow with rich red cheek in the sun flesh yellow, fine grained and firm; a heavy cropper and first class for drying, canning and market. etc.; one of the best peaches of its season: freestone.

Ripens near the end of January.

Royal George Cling.

Fruit large and quite round; skin light yellow in shade and covered with fine red in sun; flesh whitish and firm, but melting, with rich vinous flavor.

Ripens about the middle of January.

Lord Palmerston.

Fruit very large and quite round; flesh white and tender, very rich and juicy; skin creamy white; a very good cropper, clingstone.

Ripens about the end of January.

Lady Palmerston.

Fruit medium to large and quite round; skin greenish yellow, with red in sun; flesh pale yellow and tender, very melting and rich; good all round peach and carries well: freestone.

Ripens early in March.

Late Crawford.

Fruit large and roundish; skin deep yellow, mottled with dark red; flesh a pale yellow; good peach for canning, drying or marketting: good cropper, freestone.

Ripens early in March.

Salwey.

Fruit medium to large, round: skin yellow, fine red in sun: flesh fine yellow, firm and juicy; splendid canning, drying or market peach; carries well, a heavy cropper: freestone.

Ripens early in March.

Lucerne for the Hillsides.

"It is rather a significant fact that those who object most strongly to lucerne, on the ground that it interfeares with rotation, are, in not a few cases, men who grow two or three crops of grain in succession from the same field. Lucerne is not recommended to displace clover. Clover should be grown on all the cultivated land in short rotations, bringing it in at least once every four years. The lucerne should be considered an extra supply of fodder, and should usually be grown on the rough, hilly lands, unprofitable to cultivate. Being a nitrogen-gatherer, it rather improves the land it grows on, especially if a little ashes, and possibly bone-meal. are used on the lucerne piece from time to time. When that land is ploughed out of lucerne it will be more productive than when originally seeded down. Meantime, the manure made by the stock that consumed the hay will have gone to enrich other parts of the farm. We know no other means of building up a hilly farm that will compare with the plan of seeding the hillsides to lucerne and feeding the hay or green crop to stock. Lucerne for steep hillsides is one of the best ideas that have ever been introduced into agriculture."—"The Farmer's Advocate"

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The Dairy

DAIRY FARMING.

From the Agriculturist

Cleanliness may come next to godliness in most things, but in dairying anyway it comes first, and knowing what we do of the causes of disease, and the means of its transmission by milk, filthiness and carelessness on dairy farm, or in the dairy factory is a crime

This is recognised by all engaged in the industry, more and more, and cleanliness is the rule, but there are important exceptions

A representative of the "Agriculturist" recently paid a visit to a dairy farm, one of the largest in the district, and watched the operation of milking and separating. He was not supposed to be there for that purpose, or to have any interest in the matter, and as a consequence he saw how it was done ordinarily on that farm not as it might be done on special show occasion, or when the Inspector was round, If the object had been to show to a class of future dairy farmers, just how it should not be done, the demonstration would have been an unqualified success.

The cows stood almost knee deep in filth, through one of the hands was trying to lessen the amount of filth and "clean up a bit"—whilst the milking was going on be it understood---because, as he said, "The Inspector was coming," and it might not be wise to let him see the accumulation of filth.

The milkers made no effort to remove the dirt from the cow's udders and teats before commencing, and it was a grusome sight to see it oozing through their fingers into the milk.

Then the warm cream from the separator was run from the machine straight into cans containing cold cream, and the filled cans stood in a room which had certainly never been cleaned for a long time back, and was far from sweet and wholesom, this was the cream waiting to be sent to the factory.

This farm is one of the largest, as we have said, in the district, though it also has the distinction of having the largest number of cans of cream graded second class of any in the district, This might be expected, from the owner of a farm run on such lines in reference to cleanliness and public health. Every farmer supplying to that factory has an interest in the subject, for every one of them is injured by the want of care of any one of their number. Surely they could bring some influence to bear, and we would suggest a few surprise visits from Inspectors, when there would be no chance of "clearing up a bit" for his benefit.

Perfect cleanliness in all dairy operations is due to fellow suppliers and to the general public, as well as to every self-respecting man himself. Cream should be seperated into a clean can, and left to cool. For not until it is cool should it be mixed with other cream, and then the mixed cream should be stirred. If not sent to the factory daily, cream should be thoroughly stirred at least twice a day.

On the farm to which we refer, every principel of proper dairying practice seemed to be disregarded.

Testing Cows.

A great deal has been said about testing of cows by weighing their milk and afterwards testing it. Sometimes, remarks the Chicago "Farmers' Review," in buying a cow a man will milk her, test the milk, and conclude that he knows something about her. He does know something, but the something is very limited in amount. The weakness of some of the tests that have been made recently is that they are limited in duration. Often a month will not show the real value of a farm animal; nothing short of a year's test under normal conditions will show the real value of a cow. This has been fully demonstrated at our experiment stations where dairy testing has been carried on. Cows that have made wonderful records for the first month have sometimes at the last of the year fallen far behind those that made a poor showing during the first month. The farmer in determining the value of his cows will have to make up his mind to continue the work for two or three years. There are prominent dairymen who have done this. They have weighed and tested their milk for enough years to give them exact information on the value of their cows. All unprofitable ones are disposed of, and after some years of experiments of this kind the men found that they could abandon the weighing and testing of milk, far as their old cows were concerned. We advised a farmer not to be too sure about the value of a cow from farmers, who, after a week have jumped at conclusions, and have disposed of cows that were doubtless of value

Profitable Pig Keeping.

The "Large Black."

This breed has only of late years come into prominence. A most successful importer and breeder is Mr Garrett of Loch Maree. Thornleigh, views of whose stud pigs recently appeared in the "Agriculturalist" The Large Blacks have a very contented disposition and in some qualities resemble the Tamworth, that is, in their grazing habit, and their prolificness. In hot climates these breeds doubtless would have a great advantage on account of their eyes being shaded by their large ears which reach well over the eyes and so protect them from the hot glare of the sun, and are supposed to account for their docility Their legs are very straight, and they have thin skins with a fair amount of black silkey hair They are very compact in form with well sprung ribs and the young come very early to maturity, and are very robust in health The body is long and deep with long and broad quarters, the hams are well let down and wide, the loins broad The neck is long and muscular and head medium length, wide between the eyes The Blacks are greatly noted for their fat which is white and firm and for the abundance of savoury lean, and well-streaked flesh They are said to be descended from the wild pig of Cornwall and Devon Mr Samuel Sidney in his book on "The Pigs" says "that the original breed may be seen in parts of North Devon where they will jump a fence that would puzzle many horses and some hunters" They have been now greatly improved, and there is not a more docile pig to be found in the world The sows make splendid mothers and their length and breadth of carcase provide space for large litters. Their fecundity is very great and average from 10 to 14 young at a litter. Pigs of this breed are very good scavangers and are not at all particular what they eat

As I said before, they are good grazing pigs in so much that they never, or very seldom "root," and more important still, they keep fat on very little rations At the recent Royal Show the Large Blacks were very much in evidence Mr Garratt pretty well swept the boards with his exhibits which included Jolly Briton 1st and champion and Brent Longsides 1st They are both imported pigs and were successful in the English show ring It is said that if a Large Black is crossed with a white Yorkshire the progeny are the best bacon pigs that could be found, their flesh being lean and streaky, and at eight weeks old they weigh about 47 lbs.

The following is a description adopted by the Large Black Pig Society of England :—

Ears—Long, thin, well inclined over the face
Head—Medium length, wide between eyes
Chest—Wide and deep
Neck—Of medium length and muscular
Jowl—Medium size
Back—Long and level
Sides—Very deep
Shoulders—Oblique and narrow plate
Ribs—Well sprung
Loin—Broad
Hams—Large meet down to hocks
Tail—Set high, but not coarse
Quarters—Wide, long, but not drooping
Legs—Short and straight
Belly and flanks—Thick and well filled
Skin—Soft and thin
Hair—Small quantity, straight, silky

Worms in Hogs.

Hogs affected with worms in the intestines run down in condition, become very thin and lank, back is arched, eyes dull, refuse feed, walk stiffly, and appear lifeless The worms may be very numerous, in bad cases completely filling the intestines The pigs die if not treated. To secure the best results, affected hogs should receive individual treatment Twenty-four hours before administering treatment very little food should be given them Then give the following medicine, as a drench, to each 100 lb hog; large or smaller hogs should receive a dose in proportion: Oil of turpentine, four drams; liquor ferri dialysatus, one half dram; raw linseed oil, six ounces If necessary repeat the dose in four days After worms have been removed, give a tonic to put the pigs in condition

Interesting Items

The judges in dairy cow competitions should be guided largely by milk tests, which should always constitute a feature of such competitions.

There is no surer way to produce scrubbers in the dairy herd than to mix breeds, and so get antagonistic forces and purposes into close contact.

Good saleable cheese should be firm in body throughout, should have a flinty break, and should be rich and meaty to the taste, with a clean, sharp and nutty flavor.

An attack of mammitis or sore udder can often be avoided by milking those cows that have heavily congested udders two or three times before calving.

If a state of nature in-breeding is inevitable, the females breeding to their sire as long as he is vigorous enough to maintain the supremacy in his particular harem.

Do not discard the heifer after her first calf if she does not come up to expectations; try her another year, and then if she fails turn her over to the butcher.

It is a mistake to wash milk tins with hot water first—it only coagulates the albumen of the milk, causing it to stick more firmly to the sides of the vessel. Rinse first with cold water, then scald.

In the souring of milk the lactic acid bacteria first act upon the milk sugar, transforming it into lactic acid, which in turn causes a precipitation of the casein, otherwise curdling.

Unless each milking is weighed and occasional tests made, it cannot be known whether a cow is profitable to retain in the herd or not.

In Norway there were, as far back as 1894, seven dairy schools and two cheese schools supported by public funds.

Poor cows and good dairymen are incompatible; they never exist together.

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Sheepbreeding.

Mr. A. E. Mansell, perhaps the most successful breeder and exhibitor of sheep in the United Kingdom, whose name is well known to all Shropshire sheepowners, recently read a paper before the Farmers' Club (London), from which we make the following extracts:—

Starting with the remark that his object would be to "endeavour to help the beginner by trying to point out and concentrate that which is indispensable to success," Mr. Mansell continued:—

It has been said that the sire is half the flock, and if the art of breeding could be confined to one sentence, it would be said, Get to know a good sire, and whenever you think you have come across one, buy him if possible, even if you are not in want of one at the time, for you may depend that before long you will find him useful. Don't think the matter is made easy by putting the essential in a single sentence. The man who can select a good sire, or a good young animal, is master of the art of breeding. If anyone has the insight to detect a sire, he is a real judge, and you may trust him to select his females and mate them, and everything else that appertains to breeding. How is the insight to be acquired? With some it is a natural gift, but even when this is the case, it requires long and careful experience before you get to know the essential points of a sire. The longer you breed the more you find you have to learn, for breeding is a series of experiments to the very end. The learning of the points of an animal, however, is not the first lesson to be taken in hand.

The first step is to distinguish. Go amongst your sheep and lambs and learn to tell one from the other; not by a number or a mark, but by the countenance and general appearance. Unless a man can see a difference at a glance, I would not trust him to buy a sire for me. I don't say that no one is fit to judge in a showyard who has not gone through this part af his education, because a man may have acquired a knowledge of all points with the greatest care, and be able to adjudicate satisfactorily, and to breed with a large amount of success, but to go beyond this, and have the genius for breeding, he must have learned to distinguish, as it were, by instinct.

"Some gentlemen, and especially our American friends, believe in judging by points. This may do fairly well in the showyard, but few English breeders would care to adopt the system, and to select a sire in this way is altogether out of the question—There are so many points which appear insignificant in themselves which indicate the worth of an animal that cannot be dealt with by points. No one can estimate the difference in character by this method, and it is character that denotes the sire to a very great extent, if he will bear examination and his breeding satisfies you. It must not be thought that sufficient importance is not placed upon the dam, but the sire is singled out as of all importance, because you are constantly wanting fresh ones, and the value of the ewes you breed to put into the flock will depend on the sires you have used, whereas, in regard to the ewes, after the flock is once established, breeders, for the most part, keep up the required number by annually adding their best yearling ewes."

Mr. Mansell's experience has led him to think that the secret of success is to be always searching for sires. If you can select a sire even fairly well everything else is comparatively easy. There is no one, however, who appreciates the dam more highly than he does, and he would urge the beginner to be most careful in buying his females in the first place. Have the breeding right—that is, have them from a flock that has been carefully bred for a very long time, otherwise you will be deceived in the end. Of course, a recently-formed flock may comply with the above requisite if it has been started from good old blood and kept up to the same standard of excellence. When you have ewes, learn to know them individually. You will soon find out your best breeders, and you will see this superiority follow in succeeding generations.

All this is the interesting part of breeding, and breeding becomes fascinating if you really enter into it, especially seeing and trying to forcast how the youngsters will grow up. Buying a sire is always an experiment, and to the breeder who has his heart in his work a most interesting one However keen a judge he may be, he will sometimes be disappointed and deceived in his sires, but, on the other hand, he will sometimes drop upon one that will exceed his expectations, and will more than compensate him, and when he does, he should make the most of that sire, keep plenty of ewes and get his blood right through the flock. There are some others whose stock is always unsatisfactory, however good the ewes are with which they are mated. It is well, unless you feel great confidence in a sire with regard to his breeding and in other respects, to only use him to a limited extent the first season. It is hardly possible of belief that you can forecast how two animals will mate as surely as some people imagine, but when you have once tried a sire, note which ewes he suits, follow them up, and also ewes of the same breeding. The animals that suit each other best will often surprise you; the only sure rule is that you cannot mate bad, and especially badly-bred animals, with good results.

Six things are named to be kept in view as essential. They are:—(1) constitution; (2) form; (3) flesh; (4) wool; (5) character; (6) management. These things may appear simple and easy, but anyone is a marvel of practicability who can always keep these objects in the front when breeding pedigree animals.

The pedigree stockbreeder is a fastidious man, and in buying sires he will have to give away some points, and there is always a strong temptation to neglect that which is useful and essential, and to place undue importance on the fads and fashions of the day. especially what is most taking in the showyard. It is not meant to throw cold water upon fashion; on the other hand, one may say, be in the fashion as much as you can, and try to take your part in leading it, but remember that fashion changes even in the useful attributes of a sheep, therefore don't be so much a slave to it as to sacrifice any of the essential qualities that in your better judgment may tend to the ultimate good and usefulness of the breed you have taken up. We all know how much fashion has changed in our animals, especially in character and general appearance, the last thirty or fifty years. Mr. Mansell mentions "bone" as an example in this respect. The fine bone which was the ideal of Bakewell was generally favored by the last generation of breeders of sheep and cattle as denonating lightness of offal, but fashion has gradually but surely changed in this respect. Bone is not named as an essential, but still it has always been thought by practical men to be such an indication of the most practical and useful qualities that it has been in the past, and is at the present time viewed by a large proportion of breeders as of the utmost importance, the only difference being that the fine bone which was sought after in the past is now regarded as a fault. Mr. Mansell has no extreme views about bone, but likes to have plenty, and especially the right sort, but would not always discard an animal for breeding because of small bone.

"I strongly believe, however," he says, "that you must not breed so as to get fine bone all through your flock, or you will lose strength of constitution and lean flesh, and also strong bone is required to stand the forcing treatment of to-day. Breeder's views in this respect, therefore, have been completely reversed, and this, in conjunction with many other examples that could be named, shows that everything that is not absolutely an essential, may be an open question."

Every inch of animal, from head to tail and from top to toe is an indication of its value, and it is those who, after close inspection, and also at a distance, can read those signs most truly that are the best judges. Often quite small marks on animals are greatly prized, as showing a strain of blood going back forty or fifty years.

In discussing the six objects to be kept in view by breeders, Mr Mansell began with "Constitution," because this is the foundation of everything. However perfect in most respects an animal is, all is useless without a robust constitution. All that indicates a good constitution should be sought after. Having this in view, capacity of chest is absolutely requisite. You must either have width or depth of chest, but to secure a robust and hardy animal you should have a combination of the two, with a deep shoulder, big girth, and good underline. You must have these points, so as to insure plenty of room for the heart and lungs and other internal organs There are only to be added a wide loin, and a strong scrag in connection with constitution.

'Form.'—The Leicester and other longwools excel in their top form, but the shortwool breeders, although aiming at the same perfection of top form, also require more depth of carcase and underline. The ideal form must always vary to some extent in different breeds, because all have not the same standard of excellence, for this is governed by locality, climate, treatment, and the purpose for which they are principally bred. As an extreme example, obviously the wide-chested sheep that are forced to such early maturity in some districts would not be suitable to take the place of the deeper and narrower, but agile and hardy, sheep that are bred on the hills. The first thing to be considered in regard to form is the legs. Have a leg at each corner, on aright, with the shoulders thrown back into the ribs; if you can satisfy yourself so far as this, you have secured the foundation of a correct form all through. If you have the legs and shoulders as they should be, you can expect to see a straight spine, well-sprung ribs, with good chest, barrel, and underline, sufficent width behind, and a good carriage. There will always be differences of opinion in regard to form—for example, some are most decided that the neck cannot be too short; others of which Mr Mansell is one, think that a moderately long neck is desirable, if it is strong enough. There is also a further difference of opinion in regard to the neck It is said that Jonas Webb was partial to the bottle neck, and no doubt he had good reasons.

The flesh appeals to most of us very often, and all when they have their feet under the table think they are excellent judges of mutton; but it is the business of the sheepbreeder to form his judgment when the sheep is alive. With practice he will accomplish this with the hand. Speaking very briefly, the flesh must handle firm and springy, to denote quality and leanness; it must be laid over the frame in proper proportion, and here the form of the animal comes in again, for to have the flesh put on evenly you must have symmetry. There should be good development where the joints are most valuable. The leg of mutton is especially important, as being the best joint, as well as denoting leanness of flesh all through the carcase.

As regards wool, Mr Mansell, as a shortwool man, likes a dense, even fleece, which when opened shows a pink healthy skin. Such a fleece is always valuable, and also as good a sign as you can have of the right sort of flesh. The skin is valued as an indicator of the wool and the carcase.

The character is where the seeing eye comes in, and judging this by points is quite impossible. Character gives the pedigree, as it were, without seeing the record. It sums up the whole breeding of the animal, as the same word does for mankind, although with a long and good pedigree there are always plenty of flaws As with mankind, however, a good pedigree (by which is not meant an aristocratic one, but a worthy one of long maintenance) is by far the best guarantee of good character, so in animals you must not expect to have satisfactory character without there has been careful and correct breeding maintained for a long time.

In conclusion, Mr Mansell says: 'Perhaps young breeders may think I have made the difficulties of breeding appear great; but don't be disheartened. The greatest pleasure of farming is breeding. Besides, you may make the breeding of valuable pedigree animals a much simpler and safer undertaking if you are not too fond of experimenting on fresh lines.'

Sorghum Amber Cane Luberne
Essex Rape
Globe and Long Red Mango
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The Poultry Yard.

Ducks.

Hatch largely

Keep them clean

Shade the ducklings

Provide abundant water

Keep the ducks well bedded

Don't bed ducklings on sawdust

Put the green food in the water

There will be a shortage this year

Hatching is almost generally late this season

Give the ducklings meat after they are a week old

A profusion of greenstuff and animal food is of great importance

Go to F. F. Clement, for all kinds of poultry food and disinfectants

Ducklings will relish milk in any form, and it will bring them on wonderfully

Ducklings are scarcer in the market, for this time of year than we have ever known them to be before

Under any circumstances it will probably pay breeders to hatch every egg, as everything points to good prices for table birds during the comming season.

Feed will probably continue to go down in price, so that the cost of production should be small enough to allow of good profits

The following clipping from "Auckland Weekly News." sent by a subscriber:—"That Indian Runner ducks are good layers is never doubted, and the following testimony from the Rev. J. W. Williams, Vicar, to an English paper is further proof of the extraordinary productiveness of this variety of water-fowl: 'As a clergyman of the Church of England, I can vouch for the following being true. One of my sidesmen, Mr. Baigh, of Dow Hill Farm, has a small flock of fine Indian Runner ducks. These same ducks laid as follows recently:—Wednesday, 6 eggs; Thursday, 8 eggs; Friday, 6 eggs; or twenty eggs in three days to five ducks. The thing seems almost incredible, but as I know for a fact that there are no other ducks about, and no one about the premises to perpetrate a lark, that the eggs are gathered every day, and that the proper quantity for the other days remained undisturbed, there is every reason to believe that these Runners have done a double performance on three days.'"

Advice about Poultry.

Be energetic

Look-out for lice

Have shaded runs

Be eager to improve

Break up the broodies

Don't get that tired feeling

Sell the crossbred chickens

Every one should keep a few hens

Have you renewed your subscription?

Don't let the heat destroy your energy

Keep your weather eye on the chickens

Cleanliness is of special importance now

The advent of summer demands careful treatment

This is the lice season; make sure they do not get a footing

Plenty of shade must be provided at this time of the year

Keep the waterpots full and in nice shady corners

The season just passing away is a long way ahead of anything we have had yet

Good hatches were fairly general this year as far as we can gather

Have you tried F. J. Anthony & Co.'s Incubators? See advertisement

The prospects are for a warm—a decidely warm summer; make provision for it

Keep the chickens well shaded and plentifully supplied with green food

Don't throw down long pieces of greenstuff this weather

See D. Lanyon's advertisement, and then go and see him

There is all the difference in the world between an old ramshackle dirty house, and a neatly built, well whitewashed one

By the way, it's time to spill a little whitewash about. Get it on before the lice begin to breed

If you are not particularly careful about keeping your houses strictly clean during the summer months, you will have plenty of disease to occupy your time and prevent that long promised clean up

Seperate the cockerels from the pullets. It is a most important feature, and should be carefully done at the earliest possible opportunity.

Give the early hatched pullets free run on a nice, green, well shaped plot. Don't flurry them; it spoils their development.

Are your birds snow white, or inclined to go brassy if not shaded? If the latter, don't lose time providing the necessary.

A reader wants to know why we can't hatch eggs like the Mallee Hen, by just covering them with a thin layer of earth and leaving them. Guess we'd better ask the Mallee.

Reports are pouring in from all directions, providing an abundance of pithy pars for the edification and instruction of our readers.

We will be glad to hear from all readers regarding their hatching successes or otherwise. Tell us something you have learnt this season.

If you have done hatching, gather up the setting nests, give them a thorough cleansing and disinfecting, and a final whitewashing, and put them carefully away for next season.

Also, break up broodies as soon as they appear, and get them back to laying again Don't leave them on the nest for a week or so to confirm the feeling, and introduce lice to the layers.

There is a good thing to be made by the man who offers to supply at a reasonable price a broody hen with a setting if required.

Feeding Fowls.

Have the mash crumbly.

Warm quarters mean less feed.

Sour food breeds disease and death.

You cannot feed for eggs and meat at the same time.

Improper feeding is the cause of much sickness.

Wash the drinking vessels regularly and often.

Heavy egg production is impossible on stinted rations.

Greenstuff is the most important part of the summer diet.

Milk in any form is an egg producer and health promoter.

Good oats form one of the best poultry feeds and should be kept on hand by every poultryman.

Linseed meal given now will keep up the egg production and put the birds into fine condition to withstand the strain of moulting.

Corn is too heating to be largely used in the summer ration. Oats and wheat should now be the staple grains.

Animal food does not signify fertiliser; if you can't get anything else, and haven't a bone cutter, use the soup obtained from boiling fresh butcher's bones. It's real good.

When we consider the strength and vitality of the various animals which subsist solely on grass, etc., we can fully comprehend its value as a food savor.

Summer demands a less heating diet than in colder weather. More bran than usual, and an abundance of greenstuff will help the birds on at this season.

Green cut bone is the greatest egg producing food in the world. It is a food that cannot be omitted from the diet to have the best results obtainable, both in breeding and egg production. While the most prominent proultrymen know this to be a fact, there are thousands upon thousands of breeders who are still ignorant upon the subject.

J. Dryden in the "Utah State Farmers Institute Annual," shows how a bushel of wheat worth 50 cents can be turned into eggs valued at 3½ dollars. He says: "We are crying every day for factories, why not boom the hen."

B. F. (Macksville) writes: "Having no other greenstuff this winter but thistles, we have cut up and given them plentifully to the hens, with white corn and butter-milk twice a week, and kept locked until 7-30 a.m. I have had from 40 hens, during June, 7 to 9 dozen eggs a week, July 10 to 12 dozen and up to 15 dozen a week. I think the thistles are responsible Also find plenty of oyster-shell, broken crockery, and green cut bone twice a week."

It is well known that thistles possess a decided tonic tendency, and are undoubtedly a grand green food. The other elements—butter-milk, shell, bone, grit-- may have had more to do with the egg yield, which, though not exceptional is good for a river farmer

South Australian Show Dates for 1906

Address.	Name.	Secretary.	Date.
Caltowie	Caltowie	———	Oct. 10
Jamestown	Belalie	R. Rowe	Oct. 10
Minlaton	Central Yorke Peninsula	T. G. Tickelmann	Oct. 24
Moonta	Moonta	———	Oct. 10
Mount Gambier	Mount Gambier	B. L. Daniel	“ 17-18
Petersburg	Petersburg	J. Willson	Oct. 17
Port Pirie	Port Pirie	W. C. Coppenger	Nov. 6-7
Tarlee	Tarlee and Moonoora	———	“ 10
Woodside	Woodside	G. Lanterbeck	“ 12
Yorktown	Yorktown	F. Hughes	Oct. 10
Burra	Burra	J. McLaren	“ 27
Bordertown	Tatrara	J. H. Anderson	“ 26
Clare	Stanley	J. Bantley	“ 3
Eudunda	Eudunda	W. H. Marshall	Oct. 3
Kadina	Yorke Pennsula	J. W. Taylor	Oct. 3
Mannum	Mannum	J. Scott	“ 4
Strathalbyn	Strathalbyn	Tucker & Adams	Oct. 5
Streaky Bay	Streaky Bay	———	“ 5
Saddleworth	Midland	———	“
Two Wells	Two Wells	J. Kingdom	“ 4

Kemp's Specialities,

12 varieties Choicest Carnations, 7/-: 6 for 4/-
12 varieties Best Zonale Pelargoniums, 6/-: 6 for 3/-
12 varieties Regal and Show Pelargoniums, 7/-: 6 for 4/-
12 varieties Best Fuchsias 6/-: 6 for 3/6-
12 varieties Bouvardias, 7/, 6 for 4/-
12 varieties Good Hardy Shrubs, 7/- 6 for 4/-
24 varieties Hardy Ferns, 10/-, 12 for 5/-

All the above WELL-GROWN Plants of the best varieties only delivered free anywhere in Australia.

H. KEMP, Nurseryman, Unley Park, Adelaide, S A.
TELEPHONE 1282.

Wine as a Germ-Destroyer.

In the Editor's Notes in the Western Australian "Journal of Agriculture," occurs the following paragraph:—

"Dr. Dalton maintains that wines, more especially red wines, have a germicidal action upon pathogenic micro-organisms. He instances an elderly patient, who said, 'It is strange that when I was young all my friends partook of wine for dinner, and one seldon heard about indigestion, stomach complaints, or appendicrtis. Now, my friends are all water-drinkers, and they all suffer from these complaints. It is my opinion that wine is a germ-killer.'"

Olive Oil.

Medical authorities are all agreed as to the beneficial and remedial effects of olive oil, declaring it specially useful in any defects of the excretory ducts, or any low state of the system when in need of a tissue-building food. It has long been observed that those who use olive oil as a common article of food are generally healthier and in better condition than those who do not. It is said to be destructive to certain forms of micro-organic life, and for the eradication of such from the system. It is frequently advised by physicians for internal use.

Orchard Notes.

The earliest varieties of sumer fruits will be ready for market shortly; and as this is the beginning of the season, we call special attention of every fruitgrower to the importance of gathering and destroying all fly-infested fruits now if he wants to save his crop, as the neglect to destroy the first crop of flies will result in the loss of succeeding crops of fruit. It is impossible to over-estimate the importance of destroying the early crops of fruit flies, as if left alone they breed so rapidly that the fruit crop is soon destroyed.

The best way of destroying the first crops of flies is to gather and boil all infected fruit: such fruit when boiled to be fed to pigs or other animals. Feeding the fruit withour boiling will result in the escape of a number of the maggots, and is therefore undesirable.

Physoligical Studies of Vegetarian Diet.

W. Caspari.

Extended studies are reported of vegetarian and raw fruitarian diet. In connection with this subject sudies have been made of the metabolism of nitrogen, the digestibility of the diet, and the effect of the food on the respiratory quotient. Two of the subjects were professional athletes, one a vegetarian, the other not. The general conclusions drawn were in effect as follows:

A strictly vegetable diet, even when made up of raw foods, is able to nourish the body in youth and maintain it at the highest degree of physical strength and mental and physical power, yet this sort of diet is considered unsatisfactory because the nutrients, particularly protein, are not well assimilated because the food is lacking in flavour and is of large volume. The vegetarian diet when made up of ordinary vegetables, fruits, etc., has an advantage in that it is not expensive.

It did not appear that the vegetarian diet surpassed the ordinary diet on account of the small amount of uric acid formed. As is commonly claimed the amount of purin bodies formed was small as compared with the quantity obtained with an excessive meat diet and under certain pathological conditions. As regards the performance of muscular work the vegetarian diet certainly is not superior to the ordinary mixed diet.

Eggs.

Full nests.

Market quickly.

Discourage broodies.

Shelter from the wind.

Hold your best layers.

Lice are egg preventatives.

Keep the nests scrupulously clean.

Green bone keeps up productton.

Greenstuff in abundance must be given.

Pure food goes to make nice flavored eggs.

Record keeping tends to improve the yield.

The trap nest has proved its usefulness.

Take the cocks from the pens as soon as setting is discontinued.

Aim to continually increase the egg production without destroying the flock's beauty.

A mongrel flock—even if good layers—is but little cause for congratulation.

All the same it is better than a non-laying, fine feathered flock.

Beware of the contents of the stolen nest; candle them before marketing—or better still, use them for home consumption.

There is little cause for wonder that the big duty imposed upon eggs by the Federal Government (6d. per dozen) has not prevented the importation of these dainties from China, when one considers that in the land of the celestial they are worth just 1s. 4d. per 100. We are informed that in the near future, the eggs will be broken and canned before leaving China, when they will come in as canned eggs, bearing a duty of 10 per cent., or about 2d. per 100, a considerable saving over the present imposition of 8s. 4d.

H. M. (Yarrowie,) sends a report of a Langshan Game cross pullet that laid 66 eggs in 69 days, while a sister laid 31 eggs became broody, and commenced laying again a fortnight after bringing off a brood of chicks. This report is specially interesting in that the Game fowl in its pure state is a notoriously poor layer.

Mr Wickham, of Killara, has given some figures that prove beyond doubt the utility of the trap nests. Mr Wickham, with the aid of the latter, cleared out all hens that had not laid 130 eggs the first year of their lives. He also bred a certain proportoin of his pullets from tested hens What is the result? Last year with 340 odd head of adult birds the highest total gathered in one day was 174 eggs. This year, with only 260 head, or about ¾ the number, he secured 188 eggs one day, and from 170 to 180 daily for a month. One hen, on September 10th, had laid 44 eggs in 45 days, and was still going. The full benefits of Mr. Wickham's trap system will be apparent in the chicks raised this year, all of which will be from tested layers, and consequently, will probably be no slouchers.

Something in the nature of a boon to poultry keepers has been put on the market in the shape of Lice Exterminating Nest Eggs. These are put in the nests and are guaranteed to keep them, and the hens that frequent them free from vermin. Their extensive use this summer would mean a decided increase in egg production and better health in the flock.

A city fancier has handed us some letters from a country client, which disclose some very fine laying of a Silver Wyandotte pullet.

The first letter was written when the bird had been laying for a period of 71 days, during which time she had only missed 5. The final letter disclosed the really remarkable record of 81 eggs in 88 days. Incidentally it was mentioned that a pen of six birds laid 56 eggs in 12 days. This is good, and nearly comes up to Mr Ron's record in the Laying Competition of 160 eggs for August, with his Black Orpingtons, an exceptionally excellent performance.

Government Produce Department.

The Department wishes to draw the attention of all producers to the question of markets for eggs.

Owing to the other States having now become almost self-supporting, there is every probability of South Australia's present markets there being closed. It is therefore, of the most vital importance that other outlets should be established.

As a step in this direction a large and influential deputation waited on the Hon. Commissioner controlling this Department asking the Government to carry out a scheme for making a trial shipment of 700 cases to England.

In reply the Hon. Commissioner promised to undertake the proposed scheme and guarantee the freight. Under his instructions this Department is now making all necessary arrangements to ensure the successful landing of the shipment in England in good condition, and to find profitable markets there for the eggs.

The Department has already arranged for cool freight accommodation in the S. S. Britannia sailing on the 1st November next and, as the Government Commercial Agent will be in England when this vessel arrives, intending shippers are assured that every effort will be made to obtain the best prices.

The Government intend to take the risk of the freight on this shipment, and to provide all the necessary labor in testing, grading, packing, chilling (to a proper temperature), and shipping, free of cost. The freight, however, will be deducted from the account sales should the shipment prove successful.

The producers, therefore, only risk the value of the eggs, the carriage to the depot, and the cost of packing material, including cases, in a venture whereby they are ultimately bound to benefit.

The following conditions must be observed by intending shippers:—

1. Immediately on receipt of this circular intending shippers are requested to fill in and sign the attached application form, intimating what quantity they are prepared to send. (The smallest quantity taken will be a kerosene case of 22 dozen.)
2. Eggs will be received between 1st and 26th October.
3. Eggs must be consigned to the Government Produce Depot, Ocean Steamers' Wharf, Port Adelaide, and delivered there free of rail or carriage charges.
4. Eggs being forwarded to the Depot must be carefully packed in clean kerosene cases, with wheat head chaff not more than 22 dozen to case.
5. All eggs must be quite fresh and clean (not exceeding four days old when forwarded).
6. Infertile eggs are preferred, because of their better keeping qualities.
7. The eggs selected should not weigh less than eight to the lb. Undersized and double-yolked eggs must not be sent.
8. After the eggs have been received the Department will candle, grade, pack, store in suitable cool chamber, and ship.
9. The Department reserves the right to reject any unsuitable eggs received.
10. Should there be any rejects other than blacks and broken the Department will sell them locally, on behalf of consignors. Empty cases will be returned or sold, as required.

Strict attention should be given to these instructions, as each consignor's eggs will be graded, so as to enable the Department not only to render actual account sales but to advise each individual shipper of the results he has obtained.

A. E. M. NORTON.

Manager Government Produce
Export Department.

Flowers,

October is or should be one of the best months of the year for flowers and during the month the roses should be out in great perfection. Before it is too late remove all advancing shoots that are likely to cause too many branches and crowd up the heads of the plants, and remove any suckers that are growing up at the base of the roses.

Tender annuals may be planted out all about the garden in almost any part of the State. Of these, balsams should be made good use of also amaranths of all sorts, and these should make a magnificant display when they fully developed the gay-coloured leaves or flowers.

Annual asters deserve attention also, and seed should be sown early in month.

Don't use Soap in Washing Milk Vessels.

There is a decided objection, says H. E. Van Norman, of Purdee University, in the Country Gentleman, to the use of common washing or laundry soaps for washing milk vessels. As an illustration at a recent dairy convention the judges, in criticising a certain lot of butter, noted on the score-card, 'Tastes of soap.' Inquiry of the exhibitor later brought out that in her anxiety to have everything right, she had given the vessels a thorough washing with soap suds and carefully rinsed them afterwards; yet there was sufficient soap adhearing to the vessel in which the milk had been handled so that the judge could detect it in the butter. While I grant that this was a good judge, with a very sensitive taste this experience has often been confirmed. I would recommend the use of sal soda, or some other alkaline washing powder and suggest the following as a desirable method in the absence of steam, or steam in addition, for that matter:—

As soon as the vessels are emptied, rinse them out with lukewarm water, if available; if not, cold water. Wash thoroughly in water as warm as can be comfortably worked in using sufficient alkaline washing powder to cut the grease. Then rinse in boiling water or as neao it as possible. It would be a little better to use two waters, one to rinse the alkaline water off and the second to simply scald it. In ordinary practical work this is more trouble than most people will take, so that one rinsing with sufficient water is reasonably satisfactory. This vessel shluld then be turned up to drain day. If left hot it should dry wsthout rinsing.

Commins' Criticism.

By G. W. Commins.

REPLY TO MR. W. F. EVENDEN.

Sir.—Mr. Evenden has wisely refrained from issuing his "Challenge" until I have given up the breed, and have not one White Leghorn in my yards, turn to my advertisement on page 41 last issue, no mention of White Leghorns. I simply defy Mr. Evenden, or anyone else, to prove I ever penned a line boasting of the laying qualities of any of my fowls, and wish to remind him that mud slinging is not argument. I will seek to prove what I say by the result of the laying competition, what has previously appeared in your columns, and in the "Daily Telegraph." As to Mr. Evenden's statement, I claim to be the originator of it, and offered to pen 12 White Leghorn Pullets and pay in £12 towards expenses, (why did he not cover it then.) I entered, paid my fee, and being in Sydney when the birds had to go, long before, and after, I went to the Secretary and told him I could not pen the birds; I have never boasted that my leghorns were great layers, I speak of them as a breed, and have stated in yours and other papers, that Brown Leghorns were the best layers, and White next, Browns were ruined by breeding from one pen for cockerels, and another for pullets. Long before they disappeared, I predicted their downfall in the "Australasian Agriculturist," and I have already said White are also doomed. When people were satisfied with straw colored birds we had great layers, hardy, good fowls, then the "snow white, stay white" came, it has been proved that such birds are hard to rear, and often infertile; I found it so, and have dropped them. Now for the laying competition, before the event—I said Brown Leghorns were the best layers, there were none in last time and White Leghorns won, Andalusians (including Mr. Evenden's) and Minorcas absolutely last. Andalusians in the present competition are practically in the same position, while the breed I have always said to be the best is first, see page 20 (competition) every breed ahead of Andalusians. Also, see page 21 S.A. competition, where Andalusians (Mr. Evenden's), are behind every breed represented except Indian Game, even Minorcas being ahead of them, leading pen 335 eggs (Wyandottes), Mr. Evenden 177! about half. In our competition my favorites, Brown Leghorns, total 470 against Mr. Evenden's 288, and everyone says Leghorns are not winter layers. Now if Leghorns which are not winter layers (I have always said they were) tot up 470 eggs in winter, while Mr. Evenden's only do 288 only, how can he call his birds winter layers? But we do not want to go to America for birds to beat Andalusians, the sneer at Mr. Howell "'Dottes" of eggs was bad taste, the Andalusian eggs are very little larger as proved by the weights given, and the "'Dottes" laid 471 eggs while the Andalusians laid 288. I cannot be accused of ringing in a free advt. re Leghorns, I have none, I speak of the breed as I found them; now it is all changed as far as English "improved" strains go, but send to America and get some of the original type, such as were sent over to England years ago, and you will get the same grand layers. Look at the American breed, Silver Wyandottes. Finally, if Mr. Evenden's birds proved the best layers in the competition it would not convince me that Andalusians, AS A BREEN, were the best layers. I never write about a particular pen or an individual, unless I am drawn into it. I am never the first to mention names,

---

The most bewildering fact is that a great many breeders, depending on the natural method, buy up all the available broodies for their own use.

In so doing they rob themselves of a customer for eggs in many cases, where, if they adopted artificial incubation, the hens would be available for the small breeder.

There is something in this that will appeal to all thinking people, and no doubt in the near future we will see our leading breeders offering to supply the broodies instead of buying them up from outside.

K. Bechtel,
Truss and Bandage Maker
59 O'Connell-street,
NORTH ADELAIDE
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Trusses, Bandages,
Kneecaps, Leather Jackets,
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Made to Order,
And sent to all parts of the Commonwealth
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A Trial solicited.

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OFFICE,
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The November Number of

The Australian Gardener

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Experiments in Orchard Culture.

By W. H. Munson, Maine.

Considerable weakness has been developed in the seedling stocks used, which illustrates the advantage of using some well-known hardy vigorous sort as the foundation of the orchard, rather than miscellaneous seedlings. The main purpose of the experiments is to determine the relative value of cultivation and mulching for orchards with or without fertilizers. Generally speaking, the cultivated trees have made a much larger growth than the cultivated, and those fertilized more than the unfertilized. Gravestein mulched and fertilized made slightly larger growth than when cultivated and fertilized.

The average yields have been slightly in favor of cultivation. This was particularly striking in 1905, when an average of 4 bu. per tree was obtained on the cultivated area as compared with 2.8 bu, per tree where mulching was used. The yield on the portions fertilized with stable manure has been slightly heavier than where commercial fertilizers have been applied. In experiments to determine the specific effect of different potash salts on the apple, no noticeable difference has yet developed in the character of fruit or the behaviour of trees as a result of the form of potash used.

In 1902, 100 trees in a neglected orchard were set aside for the purpose of determining the best methods of renovation. Pruning, cultivating, and fertilizing have been practiced, and the results on all the plants are very satisfactory. The best results have been obtained where a complete fertilizer was used. One tree which received an excess of nitrogen there was a noticeable lack of color in the fruit, and 1904 a considerable injury occured to both fruit and trees as a result of either a too free use of nitrogen or the absence of potash. Both fruit and foliage dropped and much of the fruit was cracked, while the remainder was as soft and mellow in October as it should have been the following May. Good yields of fruit have been obtained and the author believes that the experiment demonstrates that the off year in the case of Baldwins is an unnecessary condition which ought not to exist in a well-managed orchard.

Specific test is being made of the relative values of the Fisher fertilizer formula for fruits and the station formula. The Fisher formula calls for a mixture of 350 lbs. nitrate of soda, 120 lbs. sulphate of ammonia, 230 lbs. sulphate of potash, 200 lbs. acid phosphate, and 50 lbs. kieserite. These are thoroughly mixed and sown on the surface of the ground under the tree a little further out than the limbs extend, at the rate of 10 lbs. to a medium tree, from May 1 to 10, or as soon as the blossom buds begin to open. the station formula contains about 5 per cent. less nitrogen, 2 per cent. more phosphoric acid, and 4 per cent. less potash and costs about 5 dol. less per ton. Good results have thus far been secured with both formulas but no conclusions have been drawn as yet.

In the top-working of orchards a specific test is being made of the relative value of scions from bearing trees of known value, as compared with scions from nursery trees or miscellaneous sources. This work has been underway two years. Some experiments have also been made to determine the effects of cultivation on the keeping quality of fruit as compared with sod-grown fruit. The results obtained thus far are contradictory.

In cover-crop work at the station, winter rey has proved most satisfactory on strong land. Where the soil is in need of nitrogen winter vetch (Vicia villosa) or spring vetch (V. sativa), has proved most satisfactory.

In order to emphasize the importance of rational orchard treatment in other sections of the State, some co-operative experiments have been planned with growers in the vicinity of New Gloucester. This work is briefly outlined. The bul-l tin contains numerous diagrams showing the arrangement of the various experimental orchards, and tables giving in detail the data secured as to the annual growths of trees on mulched and cultivated areas, and the yields obtained.

Suggestions upon the care of Apple Orchards.

By E. Walker, Arkansas.

Suggestions based on the results of experimental work are given for the care and management of apple orchards, including pruning, spraying, fertilizing, cultivation, cover crops, resetting gaps in old orchards, etc.

In rejuvenating an orchard of 27 acres of old bearing trees, good cultivation, pruning, spraying, and the use of both stable manure and commercial fertilizers was given. The work was begun in 1904, and in 1905 534 bbls of No. a apples were secured, having a value of 2,077.57 dols. and 240 worth of No. culls and vinegar apples total value, 2,317.50, while the expenses of production was 883.30. An uncultivated orchard of 30 acres in the same locality yielded, in comparison, but 70 bbls. of poor No 2 apples. The result of analyses of the soil and subsoil in the orchard rejuvenated are given. They show considerably less than half of the humus normally present in average southern soils. In newer ground the humus was greatest in the surface soil, but in the older land it was greatest in the subsoil

Attention is called to the injury to the apples by the green narrow-winged katydid (Scudderia texensis). This insect injured from 3 to 5 per cent. of the fruit on many trees. The injury consisted principally in the disfiguring of the fruit. The proportion of sound apples on the area first sprayed in going into the orchard was 93¾ per cent.; in other parts of the orchard the percentage was 84 to 89 per cent., thus showing that the best work in spraying was done when the men were fresh. The cost of spraying 3¾ cts. per tree.

Some of the trees were dust sprayed, but the foliage and fruit of these trees were not so perfect as in the liquid. It gave better results against codling moth than against scab and was very efficient against caterpillars. The notion commonly prevalent among orchardists in Arkansas that pruning must not be practiced was found to be erroneous when conducted in a careful and intelligent manner.

The use of nitrate of soda at the rate of 3 lbs. per tree greatly promoted the general vigor of the tree, increased the average size of the apples one-third over trees receiving a general fertilizer, and gave much better results than when only 1 lb. of the same fertilizer alone or with 3 lbs. muriate or sulphate of potash or 20 lbs. slacked lime was used. "The fruit is not so well-colored as that of other trees, and was later maturing. On this clayey cherty soil. very deficient in humus, no marked effect followed the use of the other fertilizers mentioned above, when used separately. Lime seemed to help the foliage and color the apples on trees treated, while the muriate of potash gave a very bright winesap red to the normally brownish Arkansas, or M. B. Twigs. The resets in the orchard were found to make good growth when care was given them and a sufficient fertilizer to insure plenty of plant food within reach of the roots.

Carbon bisulphid was found an efficient remedy for killing sassafars sprouts when used at the rate of a teaspoonful to a tablespoonful on sprouts 3 to 5 feet tall. It was poured down the stems, beginning 6 inches above the ground. It appeared to kill the roots in all instances. Protection from rabbits was secured by painting the trees with white lead mixed with pure linseed oil.

The most serious harvest injuries to apples were found to come from bruises originating in careless handling by the fruit pickers and in the crushing of the riper specimens by the harder specimens in heading in the barrels. By shaking down the barrels every time a half bushel is put in, and filling only slightly above the chine, this source of injury and loss can be avoided.

Silos and Silage.

It would be well if all those interested in farming and stock-breeding would bear in mind the inexorable fact that the physical history of the world invariably repeats itself. What has been in the past will invariably again be in the future, whether the result be advantageous or injurious to man. As there have been. and will be again, periods of plenty and prosperity, of rich harvests, green fields, and increasing stock, so there have been, and again will be periods of bad harvests' absence of herbage and water, and consequent decimation of stock. Alternate periods of drought, flood. and genial seasons are a characteristic of the geographical position. the geological formation, and the climatic conditions of Australia.

Accepting these statements, as they must be accepted, as facts, borne out by the experience of a hundred years settlement, it behoves us to consider, not only the means of disposal of superabundant crops, whether of wheat. sugar, or fruit. or of abundant supplies of dairy products, of cattle, horses, sheep and pigs, but what is of even greater importance. the means of combating the most destructive of all the enemies of the "Man on the Land"—drought.

For all ills there is a remedy, if it can only be found, and if, when found, men are wise enough to apply it in time, and we are now concerned with the means at hand of minimising, if not completely neutralising, the effects of long-continued drought.

Consider our late splendid seasons, and think of the enormous wealth of green crops in the farming districts, the vast areas of rolling downs in the West, densley clothed with rich, fattening grasses, which have been so much in evidence during the past four years. Then carry the mind back to the four years preceeding 1902, when the Western country was a desert, when flocks and herds died by millions, whenthe farmer could raise nothing to to sell or to feed his starving stock, helplessly dying off until stall and byre were tenantless, when the sugar-planters, instead of crushing their cane and turning out thousands of tons of sugar, could put the stunted crop to no other use than to sell it as green fedder. We desire to bring these two pictures vividly before the mind's eye, in order to bring home to the primary producer the culpaple negligence of which he was then guilty, and of which he will yet again be guilty, unless he can be awakened to the fact that the safety and lives of his stock, and, consequently, his own livelhood, depend upon his care and forethought. No dairy stock need perish during a drought; not a cow or sheep need starve, although the heavens be as brass. Every dairy farmer and grazing farmer has it in his power to prevent this. But how hard it is to induce men to move in the right direction; how easily do they forget the cruel lessons of the past. Let but the genial rains fall, let the wheat and grass and the lucerne cover the ground, and straight away all the evil days are forgotten in the luxury of the present, and men are contented to say, "As it is to-day. so it will be to-morrow." But to-morrow may provide a sad awakening, and then the careless farmer is in the position of the grasshopper which sang all the summer but made no provision for winter. The grasshopper died, and so did the cattle.

It seems almost superflous to tell men on the land how to avert the evils of drought, for all have heard of

The Silo,

but few are aware that the first silo in the Australasian States was constructed in the early days of colonisation, by a South Australian farmer, a Mr. Charles Rake, of Enfield. Dairy farmers form the neighbouring colonies visited South Australia to see how silage was made. Then they went back and adopted the ensilage of fodder with highly profitable results. From that day the silo became an institution in the States (then called colonies) But the erection of silos is still anything but universal amongst stockowners, and until the farmer without a silo will be looked upon as a rare avis in terris.

The Principal of the Silo.

The burying of brewers' grains and certain forage crops, says Storer ("Agriculture in some of its Relations with Chemistry"), has long been customary in certain localities, without subjecting them to any process of drying, by covering it with earth. In recent years, instead of digging pits, or, as the French say, "Silos" and covering it with earth. In recent years, instead of digging mere holes in the earth, it has been found advantageous to build the silo in the form of a high bin or compartment, in, or close to, the barn in which the ensilage is to be fed out to animals. As an improvement on the old plan, silos were covered with boards, weighted with bags of sand or stones, but when high, deep silos were constructed, it was discovered that very little extraneous pressure was needed in a tight, well-covered bin, and to-day the material in the silo is usually covered with a layer of bush grass or waste chaff a foot or two in thickness.

The principle on which the preservation of silage is based is mainly fermentation and the checking of fermentation. It is a matter of experience that green vegetable matters packed firmly in a silo or tightly compressed in a stack. do not ferment rapidly and putrify as they would do if they were left in loose heaps. The fermentations which actually occur in a well-ordered silo are, comparatively speaking, mild in form and small in degree. It is true that in a silo a cortatn amount of this fermentation always occurs at first. and that the degree or amount of fermentation may vary considerably, according to the kind and condition of the crop, and with the circumstances under which the crop has been stored. But in a well-ordered silo this incipient fermentation soon ceases after the air which was entangled in the forage has been used up. It is known, moreover, that the action of the microscopic organisms which cause fermentation is checked by the accumulation of certain chemical substances which are produced during the fermentation, notably by lactic acid and by the carbonic acid gas which saturates the materials and tends to preserve them from decay. But then, perhaps, it is as much for retaining carbonic acid gas inside the silo as it is for excluding the outside air that men insist on the importance of avoiding open cracks, permeable walls, and even devices for draining off water from the silo. . . . . Generally speaking, the fermentation of silage will be less pronounced in proportion as air has been more completely excluded from it by taking pains to cut the fodder fine and by treading it into the silo firmly and carefully. During the process of fermentation the temperature of the silage rises considerably—to 90 degrees, 100 degrees, or 120 degrees Fahr,, or even to 130 degrees 150 degrees, or 160 degrees. At temperatures above 160 degrees an inferior, dark-coloured, or even black, "burnt" product is obtained.

Temprature at Waich Acids Form.

In a silo filled with well-matured fodder-corn, it is possible to reduce the amount of fermentation and the heat of fermentation to very low terms by cutting the corn stalks fine, filling the silo rapidly, treading the material thoroughly, and weighting it heavily. . . . Many observers have noticed, and especially as regards immature corn fodder and other kinds of crops, that when the heat of fermentation is low, large quantities of acids are formed than is the case at higher temperatures. The English chemist Voelcker has even gone so far as to admit that ensilage produced at temperatures lower than 122 degrees is always more or less sour. This fact is so generally recognised that the terms "sweet" ensilage and "sower" ensilege are not infrequently used to characterise products obtained under such conditions that the heat of fermentation has risen 125 degrees or 140 degrees, or more, or has been less than 120 degrees. . .

In order the more readily to obtain tempratures of 122 degrees to 125 degrees or more, the fodder put in on the first day is not levelled at once, but allowed to remain in a loose pile in the middle of the silo until it is well heated and the fodder for next layer is ready to be put in. The hot ensilage is levelled and packed at the corners, and immediately covered with fresh fodder of the next layer. With a similar purpose in view, the last load or two of the fodder of each layer is left in a pile in the middle of the silo until ready to fill in the next layer.

It is said to be well to crown up the material somewhat at the middle in order to ensure a constant pressure against the side walls while the mass is settling. Finally, a covering of cut straw or coarse hay and tarred paper is added. The cover should be wall packed at the sides and corners, and a few loose boards may be laid on to keep it in place. . . . There is a common impression that—barring the inevitable waste of material—the quick hot-fermentation of maize ensilage is favorable for sweetness. The character of any given sample of ensilage depends on the amount of pressure which has been put on the materials at first.

Loss of Material in Silos.

Generally speaking, it is not at the surface of the silo nor through mouldiness that the chief waste occurs. On the contrary, the loss of material in converting forage to ensilage is caused, for the most port, by fermentations due to imperfect exclusion of air at the beginning of the process. . . A loss of 50 per cent. has been noticed in the case of lupines, and 27 per cent. in that of lucerne, 31 per cent. in the case of some mown clover that had been heavily rained upon. As regards Indian corn, losses amounting to 33 per cent. and 35 per cent. have been observed, though, when proper care is exercised, the loss from corn ensilage need not be more than half as large as these amounts.

Use of Germicides in the Silo.

It was customary in Germany, long ago to strew salt between the layers of ensilage as it was put into the crude earth-pits of those days, and good results were obtained and experiments were made of putting slacked lime upon beet-pulp in silos. There can be no doubt that this idea of checking fermentation by means of chemicals may have real merit in some cases. Professor Storer here cites a case in which a highly successful experiment was made in Sweden by Alex. Müller, who employed bi-sulphide of carbon as the germicide agent. A lot of mown grass, which, through foul weather, had begun to decay as it lay on the ground, was thrown up into a heap or stack, together with a quantity of buckwheat and sunflower plants, of the leaves of cabbages, the tops of beets, and some small roots, and straw chaff. The several layers of the heap were sprinkled with bi-sulphide of carbon during the process of building it. When the stack came to be opened, the fodder was found to be a compact, well-preserved mass, which was readily and greedily eaten by cattle.

Opening the Silos.

It is well not to begin to feed out the contents of a silo until six or eight weeks after the materials have been stored, or until fermentation has ceased. As a matter of course, it usually happens that several months elapse after the filling of a silo before it is opened. As regards Indian corn at least, it is known that silos may be left unopened for two or three years without any serious loss or waste other than the interest on the capital lying dead Indeed, it is accounted one great merit of corn ensilage that reservoirs of it may be kept during long periods, to be opened only in times of dearth

When a silo is opened, it is important not to take out from it at any one time more of the ensilage than can be fed out in the course of the day, least the loose material suffer harm through fermentation Moreover, in removing ensilage from a silo, care must be taken to proceed in such wise that no large surface of the matter left in the silo shall long be exposed to the action of the air. If ensilage were to be left uncovered for several days moulds would grow upon it, and the surface layer might decay. It is said to be well to build the silo of such shape and size—as related to the number of animals to be fed—that a fresh layer, several inches in thickness, will need to be taken off every time the animals are fed. In this point of view, several small silos will be found to be more convenient than a single large one.

Maize Ensilage.

In regions where Indian corn can be grown readily there are several strong incentives for saving this crop in the form of ensilage. It is easy to grow enormous quantities of fodder corn on comparatively small areas, and methodically to store the crop in silos in the short days of autumn, and in dull and threatening weather, and this advantage is particularly marked in regions where the climate is normally unfavorable for the curing of fodder corn in autumn.

The hauling and handling of the large quantities of water (80 to 90 per cent.) in green stalks at the time of pitting them is of course a great disadvantage, though it appears to be more than off-set by the fact that this labour admits of being methodised, and that it can be applied with comparatively little reference to weather. The rehandling of the ensilage, when it is fed out, is not specially laborious, because no very large amount of material is moved at any one time; and there is no little advantage in having a succulent material so palatable as ensilage is to give variety to winter food of cattle.

At the moment of filling the silo it is customary to cut the corn plants to lengths of an inch, or three-quarters of an inch, or half an inch—some say two inches though Goflart has urged that it is well to cut the stalks to lengths of one-third of an inch. When the fodder is thus cut, even in two inch lengths, the materiol is easily handled, it packs closely, and the air which would naturally remain in the space between the corn stalks can be pretty thoroughly expelled. But the cutting is not absolutely necessary, and not a few farmers have dispensed with it, although it is known to be highly advantageous in that the cut material lies closer in the silo, takes up less room, is more easily stowed away and compressed, and much more readily handled when it comes to be removed. Everyone admits, moreover, that when long corn stalks are packed in a silo they must be trodden down very firmly, and that care must be taken to avoid air space between the stalks least the ensilage should become mouldy around these spots of air. American experience has taught very decidely that it is best, as a general rule, to allow the corn plants to become tolerably mature before putting them into the silo. There are, in fact, very good reasons why mature plants should be preferred, for it is known that there is an enormous accumulation of useful carbonydrates in the corn plant during the latter stages of its growth Practically, it has been found that the more mature the grain is, while the stalks remain green, the better and sweeter the ensilage will be, and it is now a common practice as regards flint-corn not to cut the stalks until the grain has begun to glaze, or has just passed the glazing stage, while dent-corn is allowed to stand until the kernels are dented

On the other hand, it is not well that the crop should be allowed to get so mature that the stalks have become somewhat dry, and there is a risk that this result may happen in case the harvesting should be delayed through press of other farm work or by bad weather

With this we conclude our quotations from Storer's valuable chapter on silos and ensilages.

Depth of Silage Important in Reducing Necessary Loss.

The depth of silage in the silo is the chief factor which determines the closeness with which it is packed, and, consequently the completeness with which entangled air is expelled and outside air prevented from working downwards from the top or towards the centre from the walls in case there should be any leak there

To ensure the best silage, says Mr F. H. King, of the Agricultural Experimental Station of the Wisconsin University, and the least loss of dry matter, it is important that the silage should have a depth at the close of filling of not less than 24 feet, and 30 feet is better than 24 feet. Under these conditions, the silage is so compact in its lower two-thirds that even if the walls are a little open the silage is so close and is pressed so hard against the walls that air would enter it much slower than if the pressure were less. When the silo stands until spring before it is opened, the necessary losses in the upper 4 to 6 feet of silage may reach 20 to 25 per cent. of the dry matter put in, and this may be true also even when only the upper twelve inches appear decayed or mouldy

The Weight of Silage per Cubic Foot.

The weight of corn silage increases with the depth below the surface, with the amount of water in the diameter of the silo. One cubic foot of silage will weigh, on an average, about 45 lbs., and every 50 cubic feet of the volume of the silo will hold 1 ton.

The Capacity of Silos.

The capacities of silos increase more rapidly than do their depths, so much so, that a silo 36 feet deep will contain nearly five times as much silage as only one-third of that depth; and when it is remembered that there is less necessary loss with deep silage, the importance of depth will be appreciated.

Doubling the diameter of the silo increases its capacity a little more than four times, while trebling its capacity ninefold. It is evident, therefore, that the cost of storage decreases rapidly with increase in the size of the silo.

Grape vines do not suffer from drought as quickly as most fruits. In fact grapes are, as a rule, of much better quality in a dry season than a wet one They are looking splendid now, and the berries are filling out rapidly and should be thinned as soon as possible. Caterpillars have not been quite so troublesome this year as they were last year, owing perhaps to the early broods being destroyed.

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November Planting.

Plains.

Kitchen Garden—Sow a few Radishes, Mustard and Cress, and Celery, in damp sheltered positions. Supply water and liquid manure to growing crops of Cabbages and Celery, and earth them up. Dig up Potatoes and Onions as they ripen. Stop Beans, Cucumbers, Melons, Marrows etc., and give them a liberal supply of liquid manure and water, also to Yams and sweet Potatoes. The former must now be staked.

Flower Garden—Sow Portulaca Ipomæa and other plants suitable for the season Take up flowering bulbs as they ripen. Train and tie up climbing and other climbing plants. Water plants bedded out, and trees and shrubs planted last season, sheltering and mulching the latter. Cut back Verbenas and other bedding plants. Attend to pot-grown plants, shading, syringing, and watering them, and supplying liquid manure to all rapidly-growing ones. Pinch back Fuchsias. All pot plants kept in the open air must be plunged at once, should this have been neglected before.

Fruit Garden—Attend to watering and mulching of young trees, and to summer pruning of all. Loosen the ties of grafted and budded trees, which also require examination to remove shoots springing from the stocks or roots. Gather early fruits as they ripen. Tie up Vines. Graft or bud Oranges.

HILLS.

Kitchen Garden—Continue operations recommended for last month, the great moisture of the swamps enabling the gardeners to sow and plant anything adapted to our climate during the whole of the summer.

Flower Garden—The directions given apply also to hill gardens, in which, however, a far greater variety annuals may still be sown, many bedding plants transferred to the open ground. Layer Carnations and Picotees. Look to Roses to destroy blight.

Fruit Garden—Same as on plains.

Notes on Packing Butter.

By R. Silver Jones, Dairy Expert.

The systems of packing butter for market are very varied, some having their own particular virtues, but many are not conducive to the keeping qualities of the article packed, and now that the summer season will soon be upon us, these few hints may be of considerable value to farmers who have to send their butter some considerable distance.

The make-up and apperance of the butter should be neat end tastefully attractive, 1 lb. brick shaped pats being the most easily marketable, and it must be remembered that the appearance will help considerably towards the satisfactory sale on the market. The ends and edges of the pats should be made as square as possible so that the pats of butter will fit tightly into the box, holding it as one block.

Each pound of butter should be wrapped in special parchment paper, with ends carefully and neatly folded down. This paper folds more easily and neatly down, and also has not the tendency to adhere to butter when open, if it is wetted prior to the folding. The paper, however, should be allowed to dry off before being finally packed. It is also highly desirable that farmers should have their names, with the name of their farm, plainly and neatly printed on the parchment paper, so that customers can the more easily see whose butter they are buying. By this means customers once satisfied will always look for the same name in future, and the farmer will reap the benefit in the shape of increased call for his butter. I have invariably noticed that on all markets, both town and country, butter so wrapped with the name on the paper claims the best price on that market. Complaint is sometimes made against the paper that it causes black spots in the butter: inferior paper will do this, but only the best paper should be bought from a firm which lays itself open to supply dairy utensils of the best quality. Another complaint is heard that the salt worked into the butter crystallises when this paper is used. This complaint has nothing whatever to do with the paper. The cause is obvious, either that the water has not been thoroughly worked out of the butter, and after it is allowed to stand the moisture evaporates and leaves the salt crystallised on the outside of the paper, which very considerably reduces the appearance; or that more salt has been added than the water can dissolve, which leads to a deposition of salt and detracts from its appearance.

The package or box into which the butter is packed is of great importance. An ideal box for the purpose should be light, strong, dust-proof and well made. None of the boxes used by the farmers are what you might term really ideal, but one has to choose from the best available. Many descriptions of patent butter boxes are upon the market, nearly all excellent, but their initial cost is heavy and their weight is almost prohibitive in proportion to the amount of butter they hold as it increases the cost of transport to market and in the case of non-return the loss is heavy. The most serviceable boxes are made of spruce, ash or oak which should be thoroughly well steamed and filled with hot water for at least twenty four hours; if this does not take the smell from the wood, fill a second time with hot water in which salt has been dissolved. 12½ in cube, inside measurement, will comfortably hold 50, 1-lb pats. Wood ½ inch in thickness should be ample for strength and not too heavy for transport. The use of old soap boxes, improperly cleaned tins and such like makeshifts should be discontinued as being most detrimental to the butter.

The packing of the butter into the package is of considerable importance; whatever style of package is used, it must be thoroughly well cleaned and well dried before use. It should be lined with clean white parchment paper, which can be purchased for the purpose in large sheets. Old newspapers which are very often used should be condemned, the paper itself is not nice and the ink often comes off on to the butter, reducing the tasty appearance at once. The butter pats should fit into the box tightly, so as not to move about and thus lose their shape if the box is not full; the packing should then be neatly folded over, and, if the box is not full a batten nailed in to hold it just in position if the box is full this of course is unnecessary. However there should be no movement inside the box when either full or half full. The lid can now be fastened on, and no wet cloths of any description must be inside the box, as such are likely to induce mould, should the box not be opened for a few days, besides having the tendency to give the butter a musty flavour. All that remains now to do is to protect the butter from the heat of the sun, and the best plan for this is to sew the whole box into an ordinary bag, well cleaned, which is soaked in water, or preferably salt water, and if the butter has very far to travel, the better way is to put into two bags, or first sew a piece of kaffir sheeting round the box and then sew it in the bag, soaking the whole as before. These should be kept wet so that the evaporation will prevent the heat from getting through to the butter.

One has only to visit the different markets of the Colony to see what a varied assortment of packages and methods of packing are used. Packing in butter-muslin is not by any means to be advocated. Many again line the inside with wet kaffir sheeting. This too is bad and should not be continued. Put the sheeting outside the box and it will help you.

Some enterprising farmers during the summer months particularly pack each pound of butter in a properly prepared thin wood strip box; these can easily be procured and cost 6½d per dozen, and I feel inclined to think that they aid the proper sale of the butter to private consumers and customers, and by their help purchasers can more readily handle the butter without damaging it, and I am quite convinced that they at the very least pay for themselves in a higher price obtained.

It is of little avail and encouragement to the producer to pack his butter in the best style possible, if when it arrives at the market the boxes are ripped open and often broken and the butter exhibited for sale in a slovenly manner, and there is undoubtedly great room for improvement in this direction, and I feel convinced that it would be to the advantage of all concerned if some more general and more uniform system were adopted in the make up and packing of the butter sent to the various markets of the colony. The Railway Department would then be better able to deal with the traffic and with a package of more uniform and regular type, with the name and address of the owner clearly branded on the outside, they would be in a better position to see to the proper return of empties, the continual loss of which must reduce the profits somewhat, and I learn from many farmers that it is the question of return empties which deters many from adopting a better box, and makes them adhere to the present makeshift one that is now so much used. The cause of this question of return empties is by no means wholly at the door of the Railway Department, but the treatment they receive at the hands of the markets is by no means fair and reasonable.

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Loganberries are ripening now and the young canes for next year's fruiting are making rapid growth. These should be carefully looked after and tied to the wires all lateral and superfluous growth be removed.

Poultry.

Profit in Raising Poultry.

By E. L. Rachardson.

This article is part of an address delivered by Mr. E. L. Richardson, Institute Lecturer, before the Central Alberta, (Canada) Institute meetings.

In order to provide a suitable house for our poultry it is not necessary that we should go to a great deal of expense. The house that I am using is made of two ply of lumber with tar paper between, with a shingle roof and tar paper under, and I would ask no better house to winter poultry in. Care should be taken in choosing a suitable location for the house It should be selected where the sun will shine in all day. should face south, be in a convenient location and on dry, well drained land. Always build so that you can expand your poultry business if found desirable. The essentials in a poultry house are sunlight, fresh air and warmth, particularly the former two. I am inclined to think less of the necessity of having a poultry house warm the longer I am in the business. At the poultry house at the Ontario Agricultural College we used to keep a coal stove going during the winter and I believe we got fewer winter eggs than we would have got without the stove. I have not had my poultry house door shut one day this winter in the day time and have not shut it more than ten nights. In the day time it is wide open and at night a burlap curtain hangs in the place of a door except on the very coldest nights. My birds do not know what a cold feels like and the poultry are as dry and the air as pure as the open. In a house ten to twelve feet I like a window about three by five or six feet. Provide a regular door for use on the very coldest days and provide a burlap curtain door for general use. Make the house just high enough to prevent bumping your head and have all the fixtures so they can be removed to allow for a thorough cleaning and disenfecting. Place the roosts on a level so that there will not be any crowding for reserved seats on the top round. Make the nests so that they cannot be seen, the hens having to go into them from an alley next the wall, the nests being at the outer edge of the drop board. Provide a suitable drinking fountain, dust bath and trough to feed soft food. Be careful that your poultry quarters do not become too much crowded in the fall of the year as the young birns grow up. If this is the case the birds will become heated on the roosts at night and catch cold when they start on their hunt for food in the early morning. A scratching shed on the east or west side of the house about the same size as the house will be a great help. This does not require to be as warm as the poultry house and should only have a burlap curtain front which should only be down in the very stormy weather. Place a burlap curtain also from the wall (not the roof) over the roosts and let this curtain down at nights when it is cold. Suspend the curtain over a tight wire which should run from wall to wall the same way as the roosts about eighteen inches above them and far enough from the other wall so that the curtain will come out from the wall over wire and then drop on board. In the day time this curtain should be hung up to the roof. Place about six inches of dry clover hay or straw (not too coarse) in the hen house and it will ready to receive the birds.

KIND OF POULTRY TO KEEP.

In the first place pure-bred birds should be kept. There is just as much different in a scrub steer which is "all legs and half bone" and the pure-bred beef steer that can easily be put in good condition and will put meat on in parts where *it* is the most valuable. The pure-bred *further* has an advantage in early maturity. In Canada there were eighteen million hens and chickens when the last census was taken. less than sheep stock of Australia, hnd only one million and a half of these were pure-breds. The sooner pure-breds constitute a majority of the poultry kept in Canada the greater will our profits be.

The breeds of poultry are divided into classes for convenient reference. Three classes under which the most commonly known breeds come are the American, including the Plymouth Rocks, Wyandottes and Orpingtons; the Asiatic, including the Brahmas, Cochins and Langshangs, and the Mediterranean, including the Leghorns, Andalusians and Spanish. The birds in the latter class are noted for the production of eggs, they are nervous and as a rule not good table fowls. They take the same place among breeds of poultry as the dairy type does among cattle, which type is good for the production of milk but hard to sell to a butcher. The Asiatic class is made up of the very heavy birds, they are good layers and make excellent table birds, but they mature slowly and are not as good rustlers for food as the American class from which the farmer should select the breed he wishes to keep. As above stated this class includes the Rocks, Wyandottes and the Orpingtons (the Orpingtons are an English breed, but can be classed here with the Americans), which are all general purpose breeds. These breeds mature quickly (although not as rapidly as the Leghorns) lay well and make good table birds.

Farmers' Fowl House.

In the construction best suited for Farmers' Fowls, the chief consideration will, necessarily be cheapness, consistent with practicability; and it is on the farm and about the farm-house where the above requirements are most easily had.

I should first say that the best results will be obtained by open-fronted buildings, the ordinary lean-to-house—a back, two ends, and open front, and overhead covering—being all that is necessary. The most inexpensive protection can be erected in some corner of the farm yard, the ordinary pailing fence forming the back and end of house, leaving but one end to erect, the front being open; the further this end is kept from the right-angle fence the house will, of course, be the larger, and accommodation can be had for any number of fowls in relation to the distance this end is kept from the fence which forms the other end. The roofing timber, such as joists, &c., can all be had on the farm, while the roof, cheapness being the object, bark can be had on most farms, and while admitting that such may not make a picturesque fowl-house covering, still; for practicability and comfort, it suits excellently; nor is it anything to be ashamed of, seeing that this product of the bush has formed the parental roof of many present-day happy and prosperous farmers. At the same time, although the bark roofing be watertight, tnis and the paling walls will not constitute a healthy hen house, arising from the fact that such a structure would be most disastrous to inmates by the draughts coming through the openings between each pailing: indeed, rather than recommend this rain-proof structure, it could be safely asserted that the fowls would be more healthy roosting on the fences in the open air. The most dreaded of all poultry diseases is croup, of which a cold is the forerunner, the latter in many instances being induced not by the lowness of the temperature, for while a single specimen, or a whole flock of poultry, may be healthy and profitably kept in open-air conditions below freezing point, this game flock if in a draughty roosting-house colds would be induced at any temperature from 50 to 60, or more degrees; and, on the other hand, the house may be so stuffy, close, and otherwise insanitary, that the almost tropical temperature of 80 or 90 degrees F. has been responsible for roupy troubles. On almost every homertead there are a number of old waste corn bags or sacks. These can be cut open, and will make an excellent lining for the house, and should be tacked right round, and from the floor up to considerably above the perches, which should not be more than at most two feet from the floor. It may be rightly said that this lining would be a harbour for vermin: however, that is easily provided against. The following recommendations, if carried out, will be effective in making the place vermin proof:—To give the inside of the house, the palings, a good coating of coal tar, and tack the bags on before this dries, and another coat on them after being fixed. The latter repeated each season would contribute to a clean and healthy house; but, unfortunately, the tar is not feadily obtainable at the bulk of the tarms. However, other more readily obrained applications are effective, of which the following, for simplicity and cheapness, cannot be improved on. Everyone knows how to make whitewash, and that it is best made with fresh lime and boiling water. To a bucket of limewash, when hot, add say, a quart of kerosene, mix thoroughly, and give the palings a good coating, the following day a second application; after this the bags can be fixed, finishing up by giving these a good coating of whitewash, which will contribute to clean, healthy, sanitary quarters The perches, also the products of the farm should get an occasional painting with kerosene, and the inside of the house a whitewashing at least once a year. In districts where native cats, foxes, or other enemies of the poultry yard prevail, the entire front of house, including door, should be wire netted, thus providing that the fowls could be secure at night and kept safe from the, at times, serious depredations of the above, A roosting-house constructed as described, the materials of which are obtainable on the farm, the lime and kerosene excepted, costs almost nothing for labour, materials free, will last for years, and, if other conditions be right, will house and accommodate a flock of prize or other fowls more comfortably and healthily than is done in the buildings constructed under the supervision of the most competent architect, whose fee alone, on what is known as up-to-date poultry plants, would be more than the value of the entire stock of many a farmer's fowls.

However, there are many of those on the land who make a point of not only having their dwelling architecturally and artistically correct, but the farm offices or out-houses as well, and to those whose taste and purse tends to that end the several drawings of poultry houses which appear in English poultry journals will appeal, and from which a selection can be made, always remembering that the bulk of them have been designed for colder climates than ours, and to adapt them to Australian conditions will involve considerable more ventilation than is provided in the majority of them.

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Tomato Growing.

Pruning should commence as soon as the suckers get to be an inch long, and these will appear frequently immediately the plants are set out. If this suckering tendency is not checked by their removal the plants generally lose their first bloom and consequently the earliest fruit. Some growers prefer to leave one sucker and the main stem, some two suckers. I perfer to leave the main stem only until the first or second cluster, where it will fork, then leave the fork or two stems. If early fruit is the object, it is better to prune to the main stem only, and then top it after three or four clusters are set, if early fruit and a good crop are wanted, five or six clusters are enough; if you want a heavy crop and time is of no consequence, don't trouble to prune at all; but if earliness means money which it generally does, you must watch and prune always, Five tons of marketable tomatoes per acre from unpruned vines is a good crop, but there is a vast difference when the fruit is compared with the fruit from pruned vines. When working amongst the crop, any diseased plants or fruit should immediately be removed and burnt, and after the crop is gathered, the haulms or stems should be collected and burnt also. It is not advisable for tomatoes to follow a crop of tomatoes on the same ground, at any rate without a crop of an entirely different nature intervening. These precautions are necessary as preventive measures against the spreading of diseases. Care should be taken when gathering the fruit that it is not bruised, as such are sure to decay rapidly, those that are to travel long distances or occupy days in transit should be picked when they begin to color at the blossom or calyx. When packing, the fruit should be graded according to size and likeness, all in each package being as near as possible alike, The grading should be something like this;—I large ripe fruit 2 small ripe fruit, 3 large medium ripe, 4 small medium ripe, 5 large green fruit, 6 small green fruit. The fruit will thus look better, sell better, keep better, and pack or travel better, whilst the arrangements will be found advantageous to the buyer and more profitable to the seller, Culls should not be marketed, but fed to pigs or destroyed, as other refuse fruit. In conclusion I may say, try and establish a reputation for your fruit amongst buyers and once established you will have no trouble to get good prices, which tend to make tomato growing a profitable industry.

Sorghum and Cow Pea Hay.

We take the following fron "The Southern Planter":—

"Four years ago your valuable journal gave direction for sowing cane and peas. I followed those directions, and have been well pleased with the result, for four years I have raised this great hay crop

I regard this the greatest forage a farmer can raise, because it is the easiest to make, the easiest to cure, and the stock love it, and will eat it up clean. It is the best forage crop for Southside Virginia, being adapted to this country because this is not a good grass section, and we cannot make the hay here that can be made in the Valley. I have sown it four years in succession on one plot of land, one and one-half acres, with each year an increase in the yield. I sow a bushel of peas and bushel of cane seed per acre (I would only sow a half-bushel of clean cane seed, but the seed I sow are gotten out by hand on the farm, and are not clean.) I have used each year as a fertilizer, 100 pounds of 14 per cent. acid phosphate as directed I made last year ten thousand pounds per acre, making 7,500 pounds; from the first cutting; and 2,500 pounds from the second cutting. If sown early you can cut two crops from the same land, If sown late you cannot, but even then you can get an extra good one

I fed my driving horses, my working teams and my stock on this hay, and everything on my farm eats it as well as they do any hay. It is far more easily cured than pea hay alone, and will stand much wet weather. I have had it cut, and a rain to come and rain on it for a week, and then I have raked it, and put up in small shocks, and made good hay. I usually cut it and allow it to remain on the ground from a few days to a week, until the stalks are dry so you cannot wring out the water, I then put up in small shooks, and let it remain in these for a week or ten days, and then put it up in two-wagon-load stacks to remain until used.

The crop can be sown any time from May to August, and makes a good crop follow wheat or oats. It is far better to grow after these crops than to allow your land to grow up in weeds, as most of our farmers do.

I am informed by a dealer in hay here, that he has imported into Chase City 250 car-loads of hay. Just think what our farmers have missed in not raising this sorghum and pea forage for home use and selling hay, or at least not buying. I have sold some of this pea hay for 12 dols. per ton, and the parties using it have been pleased. I hope that the farmers in this section will try to raise more diversified crops and not so much of one thing, tobacco, and have to buy their hay elsewhere If they will try raising this crop, I am sure they will be more than pleased, I had no experience; I simply followed the directions I saw in the Planter. I never saw the crop growing, but I find it both easy and profitable to grow.

A. T. FINCH.

Breeders of Milking Cattle.

A visitor to the Melbourne Show of the Royal Agricultural Society, would have formed a very favorable opinion of the dairy cattle of the State, and a similar opinion in regard to the milking cattle of New South Wales, Queensland, and South Australia would result from attending the shows at Sydney, Brisbane, and Adelaide. There is no doubt that the Australian herds, especially of Ayrshire and Jerseys, possesses very high merit, and that of those of Milking Shorthorns are rapidly assuming a prominent position, but unfortunately, there is a wide difference between the stud herds and the average milking stock of the country. Jnst as in sheepbreeding, stud flocks reach great perfection long before the average merit of the general flocks of a country is raised to high standard of quality, the average milking stock of the Australian States is far from corresponding with the magnificent specimens of the favorite dairying breeds exhibited at the leading shows. There is quite as much room in dairying as in sheepbreedieg to improve the return per animal by increasing the quantity and raising the quality of the product. What sheepbreeders have done to improve their stock is well known, but dairy farmers have scarcely begun the great work by which, as all evidence proves, they can double their returns. In order to thus multiply their income it is not necessary to reach the perfection which is read about as being attained in other countries, but simply to go as far in the direction of improvement as their own neighbours, for there are successful farmers in all the dairying sections of the State whose returns are twice as much as the average. In regard to breeds, little need be said of Jerseys and Ayrshires, whose merits as milk, butter, and cheese producers are well known, but knowledge is rapidly increasing in regard to Milking Shorthorns, which are likely to play an important part in Australian dairying. When it is remembered that the Durham cattle were noted milkers before they were improved into a purely beef-producing breed, it will be seen that they are to a large extent unaffected by the arguments used by the authorities who oppose the "general purpose cow." When Durhams are bred specially for the dairy farm they rapidly revert to the original milk-producing type, and the modern Milking Shorthorn presents itself as one of the special dairying breeds. They are able to show highly satisfactory dairying results, and, in addition, their moderately large and shapely frame enables them to attain good value when fattened for the butcher. The last condition is likely to give Milking Shorthorns a special claim upon the attention of Australian dairy farmers.

THE FEEDING QUESTION.

On a previous occasion reference was made to the fact that dairying in Queensland was being established upon lines well worthy of attention on the part of dairy farmers in the States which have been for longer periods identified with the industry. It was in the matter of providing fodder for dairy stock that this feature was noticable, and the fact that so many new farmers had chosen dairying at the outset of their career seemed to largely account for the extent to which a system of growing fodder crops had been adopted. Farmers who have been accustomed to dairying recognise the folly of allowing the herds to depend entirely upon the supply of grass, and hence in New South Wales and South Australia, as well as in the older dairying districts of Victoria, farmers originally devoted to this branch of industry make some provision for tiding their cattle over periods of scarcety The rapid extension of dairying, however, brought a new class into the business, and hence the extent of the neglest to adopt feeding methods. The use made of pumkins to tide over the milking herds over the recent dry period in Southern Queensland, and the resort to the railways as a means of carrying the fodder from one district to another, show that thur early in the history of the industry the too common system of depending upon the vagaries of the season is being departed from. There is no part of Australia more in need of improvement in this respect than Victoria, where the expansion of dairying has largely taken the form of substituting one system of grazing for another. Many Victorian sheepbreeders are now doing more to provide reserves of feed for thelr flocks than the rank and file of new dairyfarmers for their milking herds.

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The Flower Garden

Flower Garden.

The Chronicle.

In planting the garden for a summer show do not forget to put in a few scarlet Salvias and a few Celosias. The first-mentioned is a shrubby little plant varying in height from 9 in. to 2 ft., according to the variety; it grows very easily and flourishes well in the summer, provided it gets an occasional watering. The foliage is of a refreshing green, and at the point or extremity of each shoot is produced a spike of bloom of an intense crimson or scarlet shade: this spike keeps on blooming for a few weeks, and when in full bloom the plant is one blaze of color and very effective. It is easily propagated by seed or by cuttings of the young growths placed in sand. Seedlings and plants can be procured from any nurseryman at a cheap rate, so that the plant is accessible to all. The showiest varieties to grow are "Glory of Stuttgardt," "Ingeneuer Clavenaud," and "Bonfire."

Celosias, or feathered cockscombs, also make a magnificent show in masses or intermingled with other plants. The flower spikes are borne in great abundance on low bushy plants, and resemble in appearance an ostrich feather. In this respect they vary from the old flat or curved cockscombs which presents rather a heavy ungainly appearance, whilst the Celosias are very graceful. The colors vary from pure-white to deep purple, whilst the yellow is represented in several shades. Sow from seed in light sandy soil: at this time of the year they could safely be sown in the open.

Tuberous Begonias should now be showing foliage if potted earlier in the season. Should this be the case, gradualy give them more water and occasional watering with liquid manure will do them no harm Where the bulbs have not been potted pot up at once in small pots in a loose, sandy mixture of sharp sand, composit, and well-rotted manure, but see that plenty of drainage is placed at the bottom of the pots. For drainage broken charcoal is very good, as it helps to purify the soil. Give very little water at first, gradually increasing the supply as the leaves expand. When the pot is filled with roots turn the plant into a larger pot, pressing the new soil firmly around the ball of roots, and feed up well with liquid manure.

In potting plants never put a small plant into too large a pot, as soil is very apt to get sour in such pots, and the plants do not thrive. All plants do better if grown in small pots first and then gradually potted into larger sized pots as soon as the plant gets pot-bound.

Irrigation: For Flower-Beds.

(By S.)

The term irrigation covers a vast multitude of schemes for distributing water over the surface of the earth, for the promotion of vegetation of a very varied nature; but I only intend to write a few words on this occasion on irrigation applied to flower-beds and borders.

I have no doubt many who read this have seen some people watering their borders in a most unscientific manner, and those, too, in many cases, who should know better. I have seen some take the hose in their hands, and squirt the water indiscriminately over flowers and shrubs without properly wetting the ground, others will let the water on too heavily, and knock holes in the ground, as well as seriously injure the plants by breaking them down with the force of water. This sort of plant irrigation should be avoided.

Irrigation should be done properly, or left alone, because this branch of gardening, to a very great extent, is the secret of producing a grand display of flowers and foliage throughout the summer. In no case should flowers be *squirted* with the hose, unless the borders have been previously mulched with a good rotten stable manure, or some similar substance. This practice will not only save a great quantity of water, but the water that is distributed on the mulching will carry all the nourishing matter the mulching contains to the roots of the plants, causing a vigorous growth. Of course, any method of applying water must be carried out carefully and at the proper time of the day. If the weather be hot, early morning or evening will be found most suitable. Where a good force of water is procurable, sprinkling is perhaps the speediest method: but if borders have to be irrigated without mulching, I have found the best plan to adopt is to cut shallow trenches with a hoe, zig-zag, or any way so that the water runs slowly. By this means the moisture works itself through the ground to the roots of the plants, but if it be allowed to run fast along the trenches this effect is lost. Care must be taken to thoroughly soak the bed or border in question. The trenches should then be nearly covered when the surface is sufficiently dry to be workable.

Sprinklers have their advantages as well as disadvantages. To my mind, they are more adapted to lawns and carpet beddings. I have had a good deal of experience with this class of irrigation, and have found it very injurious to plants that are in flower, not only by knocking them down, but in taking the colors out of the flowers.

The necessity for a systematic thinning of fruit has been especially brought home to us this year. Owing to stress of work, we were unable to thin the apples and pears, and on examining the trees for Codlin Moth, it was noticed that in almost every case where the grubs had begun to attack the fruit, they had commenced on the inner side of the cluster of fruit, just where the poison could not reach them. It also shows that, however carefully we spray, there is a big per centage of grubs escape the poison, and we shall have to adopt a more effectual method of dealing with the insect. The high winds have thinned the crops to some extent and have also dried up the moisture in the ground.

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- Bedding-out plants grown in Jadoo wil resist long-cotinued drought
- Clean to handle, and therefore specially suitable for window boxes, and for growing flowers in the home

DIRECTIONS FOR USE.

For Plants in Pots—Use it exactly as yo would use earth. The only thing to be taken care is that the Jadoo is pressed tight round the plant. Water the plant well directly after potting. Don' overwater afterwards. In sowing seeds and plantin cuttings in Jadoo an even surface must be obtain by sifting the Jadoo, or by putting a little fine so or sand on the top of it.

For Tomatos in Pots—Sow in Jadoo, and u Jadoo for two first shifts: afterwards, half Jado half earth.

For Strawberries in Pots—Strike the runner in small pots full of Jadoo: use half Jadoo and hal earth afterwards.

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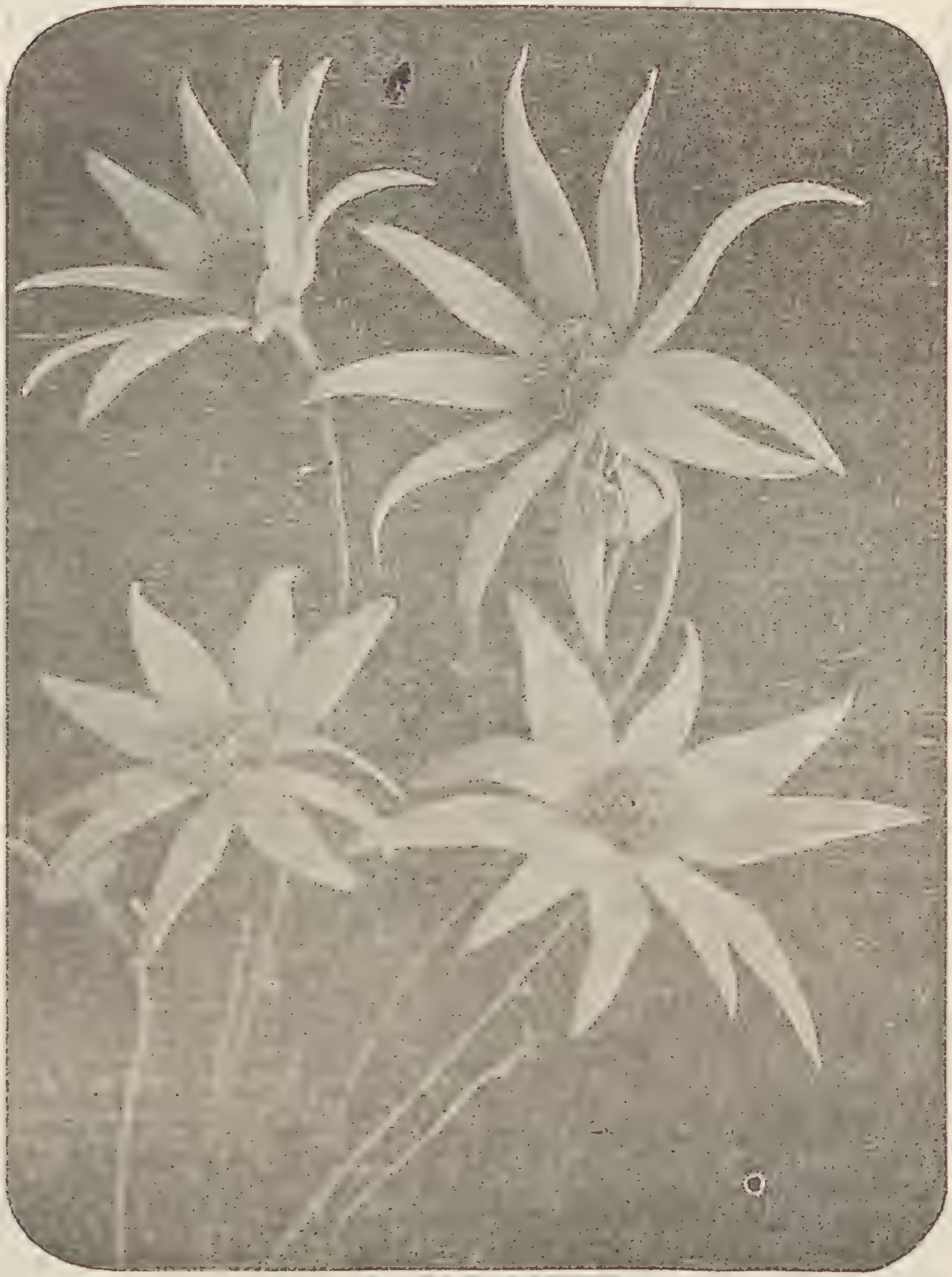
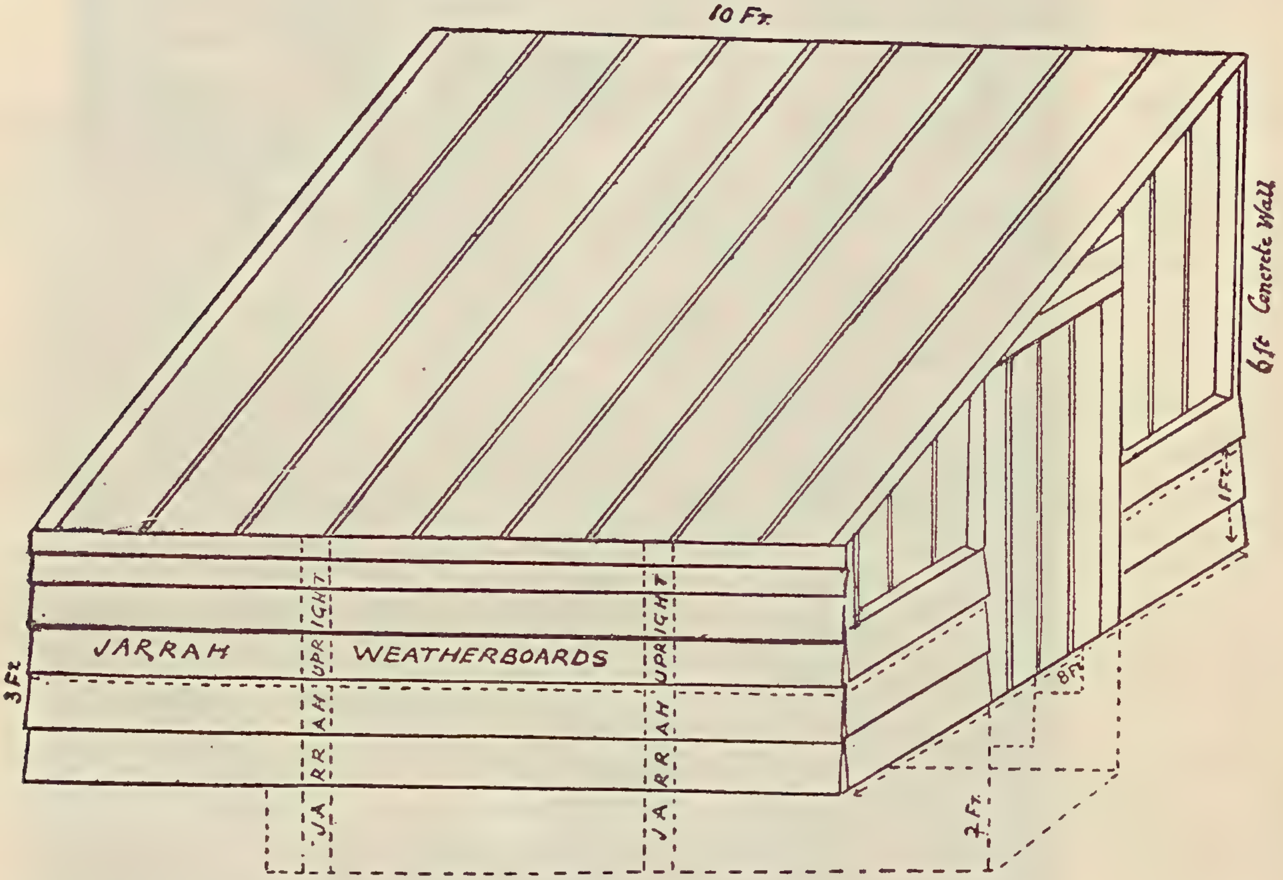
THE FLANNEL FLOWER



Actinotus Helianthi Labill.

Rough Plan of a Lean-to House



Excavate 2 ft. for footway, using earth to rise bench 3 ft. Brick up sides and steps.

The above illustration will commend itself to many of our readers who are desirous of putting up a nice convenient size glass house cheaply. The question of cost looms large in the mind's eye of the lover of pot plants whenever (and it is often) the desirableness of erecting a glass house presents its self to him.

In the illustration the three jarrah weatherboards above the words could be secured together at the back and hinged to the wallplate above, and this would provide sufficient ventilation

The benefit of having a concrete wall is that a splendid collection of ferns can be grown against it by using 2-inch mesh wire netting to hold up a surface of sphagnum moss, with peaty soil filled in at the back. A suitable bed is readily provided. By pushing one finger through the moss into the peat small ferns can be bedded easily. We have seen a collection of fifteen or twenty varieties thus grown and dropping gracefully over the whole mass, and hiding it. To water this either a small spray pump or syringe or the hose direct from the tap can be used.

The bench below it would be best made of solid earth. The top soil of the pathway could be thrown over the wall, and the surface to a depth of three or four inches be made of a rich compost, in which Ferns, Begonias, Primulas, Palms etc., would do well, and pots of other flowering plants could be placed standing directly on the soil or on inverted pots.

The lower side of the house being nearer the glass would do well for Cyclamens, Primulas, Sheptocarpus, Coleus, small Begonias of all sections, etc.

The rough design above will of course need some little facility with tools to construct it, but anyone handy with tools could erect such a house.

FERNS AND LYCOPIDS.

THESE are perhaps the most graceful of all plants. Their various forms are so elegant and their appearance so fresh and beautiful that they are deservedly universal favorites. The fronds of nearly all ferns, and especially those of the different Adiantums or Maidenhair (the most graceful of all), are invaluable in the arrangement of bouquets, also for table and other decorations. The tree ferns, particularly the Dicksonia Antarctica, with their magnificent fronds, make very ornamental plants for the decoration of ferneries, shadehouses, verandahs, etc.

Ferns are of easy culture. Shade and moisture are essential to their successful growth.

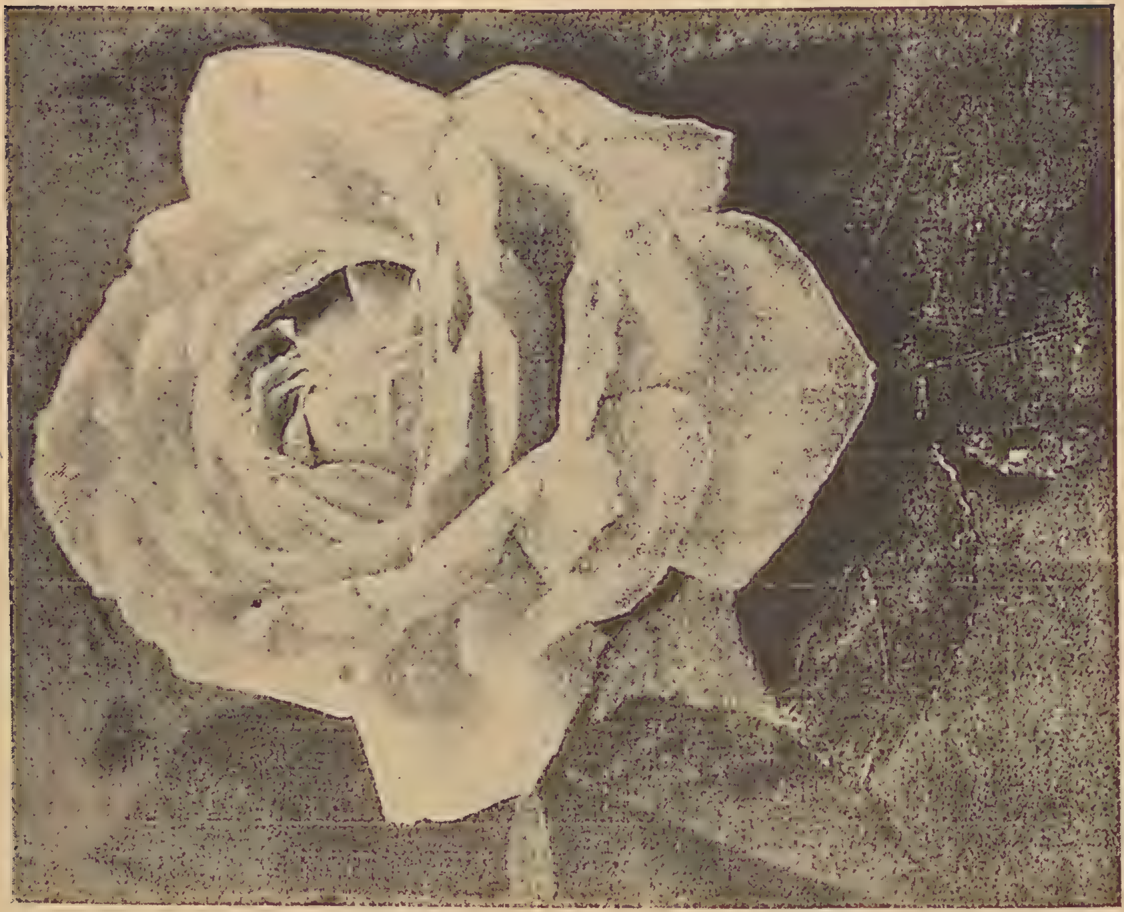
CULTURE.—Ferns should be examined every day: in the morning in the winter, in the afternoon or evening in summer. They must be watered freely when they are getting dry, and not again until they really require it. The best time of the year to re-pot ferns is in the spring. The soil should be kept coarse, and should consist of lumps of turfy peat mixed with loam and coarse sand, so that the water may pass readily through it, or the soil will become sour and and the plant sickly.

Hanging Baskets.

Microlepia Hirta Cristata.

These, when filled with ferns, make beautiful ornaments, and many ferns do well and show their beautiful drooping and graceful foliage to advantaga when suspended in the Summer House. They should be kept as cool as possible.

Striking Rose Cuttings in Water.



The number of subjects that can be rooted from cuttings in water is much larger than is generally credited Amongst them are roses, although they are seldom increased in this way As a novelty it has its interesting features A mode of striking cuttings of the kind in bottles of soft water is a plan as simple as it is practicable, inasmuch as cuttings taken off at any time during the summer will root in this way in from five to six weeks, after which they should be potted carefully in light sandy soil. and placed in a cool frame for a week or so until established. when they are ready for planting where required. The cuttings should be cut clean below an eye joint. and none of the bark bruised. It is a help to make one or two othes cuts between the lower eyes, but low enough to be under water The bottle may be of any convenient size, and may be placed in the greenhouse or room window, as the only attention they require is the filling up of the bottles with water as it evaporates. Another plan after rooting is to fil fip the bottle with a compost of light soil, and then pour off as much as possible of the water. When the soil is fairly dry the bottle can be broken, and the young plants pottd on. Impatius Sultani, English Ivy, Nasturtiums, and many other things will readily root this way.

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The Australian Gardener

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Lilies.

Lilies are the most noble of bulbous plants, and it is rather a disgrace to our horticulture that they are so much neglected. Except the common white kind and the orange, it is rare to see any of these plants in an ordinary garden, and even the common kinds have to be looked for in the gardens of the cottager and artisan. And yet there are no plants in the country more suitable for outdoor cultivation with us, and we hope ere long to see all gardens embellished more and more with the best kinds of lilies. They bloom chiefly in the height of summer, when every lover of the garden is daily among his favourites, and have a dignity of character and a size which places them quite apart from other flowers or herbaceous plants. They were abundant in English gardens more than two centuries ago, have been cultivated for ages in European gardens, and are now more worthy of attention than ever, in consequence of the splendid species that have been introduced of late years.

The chaste white lily of English gardens has an interesting record of historical associations. It was largely employed throughout the times of the Greeks and Romans in their great festivals as the emblem of purity, and by all great old-time artists in their pictures upon religious subjects. It is probable that one of the plants which we gained from the East by means of the Crusaders, who stocked our gardens with many beautiful things. Of the two species of more modern introduction it will be questioned by none that Lilium auratum, the golden-rayed hill lily of Japan, is the most magnificent, and has done more to create an enthusiasm than all that has ever been said or written on their behalf. Although it can be forced into flower early in the summer, it is most attractive when grown in a natural way, and allowed to bloom August or September, while its elegant relation, popularly known as the white trumpet lily (Lilium longiflorum), is invaluable as a winter and spring decorative plant, and is very largely grown for church festivals, where its immense flowers of snow-like purity are greatly valued. Lilium auratum is annually imported in such quantities from Japan that it is wallichianum, of the trumpet section, and the beautiful golden Martagon, L. hansoni are rather expensive. They may be grown by those who can indulge in the luxury of their possessions, but the majority prefer sorts not more expensive to purchase than L. auratum. In the white trumpet section, very cheap, also very beautiful, are L. longiflorum and its variety eximeum. These flower early, long before the auratums, grow from 18 inches to 2 feet high outdoors, and are very handsome; but the finest in the section is L. harrisi, known as the Eastern ily of Bermuda. The flowers of the latter are pearly white, large, true trumpet shaped, strong, well-grown plants producing several on one stem. Every admirer of liliums should grow this acquisition, and the bulbs are not now expensive. Those named precede the auratums: for following them, L. lancifolium or speciosum—for it is sold under both names—cannot be overlooked. There are several varieties, but three distinct, beautiful and inexpensive are album, roseum, and rubrum—the first white, the second suffused and spotted with rose, the third being more deeply tinted and spotted with crimson. The scarlet Turk's cap, L. chalcedonicum, is elegant and rich, flowering early, and growing 3 to 4 feet high. Very rich, also scarlet, with black spots and elegant in form are the tiger lilies L. tigrinum fortunei, and splendens; there is also a double form, L. tigrinum florepleno. They are mid-season lilies, and grow about 4 feet high. Of the same height, smaller, but very beautiful, orange, yellow, and spotted, is the Canadian swamp lily, L. canadense. Though a little dearer than those named, the price is by no means prohibitive. A trifle more expensive still are L. browni and L. krameri, the first a noble live long and increases rapidly when carefully cultivated. Although protection is not as essential in summer as in winter, it is necessary to guard against heat and drought as it is to guard against severe weather. Dry hot soil will impoverish the bulbs and prevent increase; to obviate this it is necessary to coat the beds with a thin covering of strawy little or peat fibre. It gives all the assistance needed, and the winter rains dilute the plant food and carry it downwards, to be absorbed by the soil, to stimulate energy in the bulbs when they need it in the spring.

Lilies are rather dainty in their choice of fertilisers. Peat and leaf mould are acceptable to some of them, but animal manures, if used at all in their culture, must be disguised by complete decay, or placed at such a distance from the bulbs that their stimulating properties may not be disagreebly suggestive. If lilies of all denominations are carefully treated in way they will not "run out" after the first season; but on the contrary, rapidly increase in vigor and number. They should thrive for many years in the same soil and place, and much better than if removed annually. The bulbs should not remain long out of the ground, for to be successful they must make new root growth quickly, consequently the sooner planted after obtained the better.

The mixed herbaceous border, the fronts of shubberies, the sides or other parts of lawns may all be used for the successful cultivation of lilies. The time of planting ranges from October to March; but as every day a lily bulb is out of the ground it loses something of its strength, the earlier they can be procured and planted the better. As to the depth for planting bulbs, from 6 to 8 inches is a good medium. A few inches of prepared soil, both over and under the bulbs, is useful in many ways. Plant the smaller sorts about 6 inches apart, leaving more space for the stronger and larger species. The most striking mode of planting is in groups of three to nine bulbs in a mass, This system is well adapted for growing lilies in herbaceous borders or beds, and is far more effective than single plants dotted here and there. Then there is more art in planting lilies than in simply placing the bulbs right side up. The arrangement of the tall and low growing varieties should be planned carefully so that replanting will be unnecessary. See that all mutilated or decaying scales are removed before planting, and that the bed for most of them should not be in sodden ground. On light soils and with such species as cannot be procured until springs it is, perhaps, best not to permit them to bloom the first season, directing all the strength to increasing the size of the bulb and getting it thoroughly established. With the teachings of experienced growers the cultural requirements of lilies can be snmmerised very briefly. They require a cool rooting medium, shade from strong sunshine, and some means must be employed to preserve the bulbs from injury whilst in the soil, either by reason of lack or from excess of moisture or great heat; beyond this, the bulbs meet with enemies; that would not be found in their native habits, and these must be looked after.

Liliums already established in pots, and which have produced flowering plants during the past season, will now need seeing to. The stems have either died down or are withering, and not a few amateurs are in doubt as to the method to adopt in preserving the bulbs. An opinion appears to be widely prevalent that they should be shaken out of the soil, dried, and kept out of it until spring, That is not the best plan. The earth in the pots may get nearly dry, when the whole should be turned out of the pots, and the greater part removed from the roots that proceed from the base of the bulbs. The dry and dead roots should then be cut off, but not those that are fresh, stout, and fleshy in character These should be retained, and the bulbs placed in fresh soil. The stems, when they wither, should be cut off close to the top of the bulbs. In some cases, especially when dried bulbs are potted very late in the spring, other bulbs do not form large enough for producing flowering plants another year, and such as are producing in a small state may be potted in the hope of larger being produced in the summer for flowering during the subsequent season. The spring and summer treatment will be preferred to in due time. the object now being to describe the details of management in potting, and these, as will be seen, are so simple that no difficulty ought to be experienced in carrying them out.

Flowers.

GLADIOLI.

The winter has had a great flowering of these bulbs all through November: of course, with the dry weather the quality is not quite up to the mark, but notwithstanding the almost total absence of rain the flowers have hardly been affected by thrips at all. This is attributed to the fact that the plants have been frequently and thoroughly soaked with water in addition to the foliage being sprayed with the hose. These bulbs are planted in rows about thirty feet long on a slight slope, and they are easily watered by throwing out a furrow eight inches or a foot from the row of bulbs; a furrow on each side of the row and then turning on the hose at the top of the different furrows in succession, this gives the ground a good soaking (by which the roses amongst which the Gladioli are planted have also profited considerably) A rather interesting thing about the gladioli was what happened to the sparrows: with the earliest blooms the sparrows set to work teating a hole at the upper end of the tube of the flower in order to get at the honey in the nectary, by so doing tearing off one of the wings of the flower. To counteract this a little white arsenic, no more than would go on the point of a penknife was put in the upper end of the tube, and after trying it once or twice the sparrows gave up the business entirely. and for some weeks they have not touched any of the flowers at all.

DAFFODILS.

Many of these bulbs are completely at rest, and in such case they may be lifted and stored for a month or two before re-planting. Growers will remember how a little later than this last year there came a little lɐter than this last year there came a little rain, with the result that very many of the incomparables and Hybrids and Poeticus put on root action, so that if the bulbs be dug at all, it is better that they should be under cover before any rain come, unless indeed they are replanted immediately after digging, this the writer thinks is the best treatment for all bicolors.

CRINUMS.

C powelli album is now in bloom, and is by many considered quite the best Crinum that we know, the flower is very pure white, with good expanse of the perianth, and carries its flour boldly. Other crinums will be coming on for flowering directly, and these, according to their seasons of blooming can be watered

BULBS.

Almost all bulbs like a liberal supply of water while growing and blooming, and the trouble is to know when to commence and when to leave off; watering resting bulbs will often kill them. so that unless the grower has noted up his dates he had better leave watsring until he sees the plants start. Here it is wonderful the regularity with which things come on at the same time of the year, year after year little or no variation in the day, a day or two one way or the other and that's about all.

HIPPIASTRUMS.

These are pretty well done flowering now, and seed has to be watched for, if it be desired to raise new bulbs or increase stock by seeds. At the present time these bulbs are just as well not watered, they have pretty fairly made their growth for the season, and may just as well be allowed to ripen, though the writer wonld have preferred a good fall of rain in the end of October which would have kept the bulbs going on growing until Christmas time, still as they have been checked it would not improve matters by watering them.

BELLADONNA.

Brunsvigia, etc., are now losing their foliage: these plants should now be lifted dry until the end of January. The trouble where bulbs are grown in a mixed garden is that it is almost impossible to avoid some of them getting water at the wrong time, thus a Cactus Dahlia is planted near a clump of Belladonnas, the Cactur Dahlia must be watered, the Belladonna does not want any, now what is to be done. A friend of the writer suggested that anyone having a large garden should take care to have all bulbs by themselves. That is all very well but the finest patch of Daffodils in the world looks a bit blank from Nov to June, and again bulbs are very various in their seasons so that they would have to be sorted up according to their flowering times and planted accordingly. Thus we have different sorts of Crinums flowering or blooming right on from September into April, so it would not do for us to plant out all Crinums even in the same plantation.

SPARAXIS, IXIAS, FREEZIAS, ETC.

All these little bulbs have lost their foliage or are getting rid of it as fast as they can. There is a lot of seed this year, and this may well be saved or may be allowed to sow itself in the grass. Seed sown in the grass will not come up so fast and, perhaps, a good deal of it may be smothered if the grass be heavy; but a lot of it will grow, and as there is a big lot of labour involved in planting 10,000 separate bulbs in the grass, some of our growers do not hold with saving seed, but the writer's fancy would be rather to see what could be done in the way of evolution by saving seed. Again, where a large number of bulbs are wanted for acclimatising in the grass the cost would become a matter of consideration hence it is well to save one's own seed, either scattering it about in the grass and leaving it to its fate, orplanting it in boxes and putting out the bulbs when large enough. But in any system of seed saving it is desirable to mark the bulbs while in flower so as to save the seed of the very best sorts It is a very common thing to hear people talking about flowers sunning to one color, and undoubtedly they do, and generally to the very worst representative that you have, the reason of it is, that the best flowers are those that are at once picked, the inferior ones are left to reproduce themselves, then those supply all the new bulbs that come up; on the other hand there are very few of the better ones left, if any, and what there are seemed overpowered by the great quantity of pollen which is left upon the more numerous flowers of the inferior sorts.

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The Dairy

Essentials in Good Butter-Making.

Particularly for Summer Months

By R. Silva Jones, Dairy Expert.

During the summer heat considerable difficulty is always experienced by dairy farmers in making a really good marketable butter, and these few points are penned to help those, who often through want of a little knowledge on the subject especially in the heat of the summer, suffer far more inconvenience they should. Although I do not wish to infer that without means of artifical cooling hard and firm butter can be made throughout the summer, I am certain that if these suggestions are followed, the bother and inconvenience of soft butter will be reduced to a minimum, and the quality of the article made will be most decidedly improved. In many cases the quantity will also be increased, as, under the present conditions, tests go to show a considerable amount of waste in the method of working.

First and foremost the buildings or rooms in which the butter is made should be thoroughly well cleaned up and should be well white-washed at least once a year, preferably it ought to be done at the beginning of each butter season which, is as a rule, in December. For an ordinary farm dairy, from an economical and from a working point of view I consider a building on the hut principle, if properly made, and nicely finished off on the inside will answer the purpose admirably. I noticed a very nice arrangement the other day in a farm dairy on the hut principle.

The floor of half the hut was cement and the other hslf was boarded; the cemented half was used for the churning etc., and the boarded half for the making up and packing on. This arrangement being so much nicer for those working with the butter. The dairy itself should be exclusively used for the cream ripening and butter making. Nothing else ought to be kept in the room not even the separator. It is much better both from the point of view of cleanliness and also for easy working, that the separator should have an apartment quite to itself. In some cases a corner of the milking shed is divided off for this purpose and in other cases it is done in an adjourning room, but wherever it is done, it will be found that anywhere other than in the dairy itself will be preferable, as the dairy must be kept scrupluously clean, and with the separator therein it necessitates the tramping of a large amount of dirt and dust into the dairy besides the smell of oil, and in the summer it will be found easier to keep the temperature lower on account of there being less traffic in and out.

The only objection to the separator being away from the dairy, and perhaps in the shed, is the accommodation for hot water for washing up on completion of the work. But this small objection is I think easily over-ruled by the consequent advantages gained.

It must be fully understood at the outset by butter makers that the quality of the butter to be made is obtained during the process of cream ripening, and it behoves everyone therefore to pay very particular attention to this process, as the churning is purely mechanical. If good cream is put into the churn there is every possibility of getting a good butter out, but if indifferent cream is put into the churn it is unlikely, in fact it is impossible for a good butter to be the result of the churning. In order to obtain this object it is essential that the cream should be taken from the separator as thick as is consistent with perfect separation. For this the milk should be separated as soon as possible after it is milked to prevent the temperature falling. During the winter months the cream can be separated a little thinner, in fact it will be found better to thin down a little as soon as the cold weather sets in, or loss of butter may be the result from imperfect separating. One hundred pounds of cream should produce from fifty to sixty pounds of butter. One considerable error that is generally made is that the cream bucket containing cream from a previous separation is placed under the cream spout to receive cream from subsequent separations. This especially during the summer, is a fatal mistake. No cream must be mixed until such time as the new or freshly separated cream has stood and cooled to nearly or close to the temperature of the old or previously separated cream. The reason for this is obvious. During the summer months cream often becomes over ripe, which must in turn tell against the butter produced, and the repeated addition of a warm cream to the bulk helps this overripeness, whereas if it be allowed to cool *first* and is then added to the bulk, the tendency to this overripeness, which often develops into partial decomposition, is reduced to minimum, and the benefit of this practice will evidence itself at once

The next and equally important as the previous process is the thorough æration of the cream itself. The benefits derived from this æration may be summed up as follows, that is, of course, together with the occasional stirring of the cream to complete the æration :—

The exposure of the cream to the air permits of the free passage of the naturally cow-like smell which belongs to fresh warm cream. By being exposed to the air while it is cooling down, this will pass away. The air again is responsible for bringing out the natural color of the butter and prevent the cream from ripening unevenly and producing butters of a different character from the same bulk of cream. The continual stirring, say at least morning and evening, brings a different portion of cream to the surface and allows the whole to ripen evenly. By this stirring should the cream not be sufficiently thick and milk being present in the cream which must be avoided if possible, the coagulation of such milk will be broken down and the term may almost be applied that it has the tendency to liquefy such coagulation. This cream will then pass away with the buttermilk, but if it is not stirred the milk at the bottom of such receptacle holding the cream will coagulate into a mass and deteriorate the cream and when the whole is thrown into the churn, the churning process will break the coagulated milk into small lumps which will become mixed with the butter and it is impossible to get them out. The butter will then be full of white spots which will soon start to decompose and naturally will carry the butter with it and soon become uneatable. No cream must be added to the bulk, at less than twelve hours to the churning, or streaky butter will result therefrom.

It will therefore be seen how important it is first of all not to allow any milk in the cream, and should by any mistake any milk become mixed with it, how by continual stirring its ill effects may be reduced. The cream to ripen is best put into any vessel very open mouthed ordinary milk dishes are best, but if the amount of cream is large, they are cumbersome. When large, buckets are best, enamelled preferably, if the enamel is not chipped. They should be immediately discarded for cream as soon as they chip. Whatever is used should only be covered over with butter cloth—no lid of any kind that excludes air should be used—and to stir the cream with a wooden spoon will be found better than anything else. When the cream is ready for churning—i.e. sufficiently ripe, which can only be gauged when the cream should be discinctly acid to taste, but still retaining its sweet smell. The cream so treated will undoubtedly be found far too thick for churning. It should then be thinned down with fresh clean water—on no account should milk be used—until the milk runs easily off the stirrer. If this is not done the cream is apt to 'bong' or 'froth up' in the churn and make the process of churning very laborious.

The temperature of the cream is the next important item to notice.

The temperature of churning naturally varies in accordance with the time of the year, and as a gederal standard 60 Fahr. may be taken as the churning degree to be varied in accordance with the surrounding temperature in winter up to as high as 62 or 64 Fahr. but in summer down to 56 or 58 Fahr., if that temperature can be got, where no artificial means are at hand to reduce it. In order to reduce the temperature in summer to as low as is possible, the cream should be placed outside the building at night, with wet bags or cloth securely tied round the outside and of course churned early in the morning. But where the cream has been properly separated and ripened it will be found that it can be churned at a little higher temperature with no ill effect to that which has been improperly ripened. It is advisable to strain the cream into the churn in order to break any lumps and secure an even churning. Great benefit in the quantity of butter will be found in churning the cream at a proper temperature, especially in the winter months, as when churning at a very low temperature without heating, a considerable portion of the butter is wasted by not being churned, and passing away in the butter milk. Dairy thermoters are an essential adjunct to the dairy.

They will save you work and give you better and larger results. These thermomters are inexpensive, being only about 1s. 6d. to 2s. 6. each, but care must be taken that correct ones are purchased, as being so cheap they are not all quite reliable. It is easy to check them against another one that is more reliable.

Colouring of butter, where it is needed, may be resorted to without ill effects, but it should only be resorted to where absolutely necessary, and the market desires a butter or a higher colour. Fortunately, however, colouring is seldom needed in this Colony. When, however, it is necessary only the best should be used, and used sparingly. I can recommend Chr. Hansen's Butter Colouring as being very good. It should be added to cream after it has been thinned down just prior to commencing to churn. The colouring must be diluted with water to insure its perfect mixing with the cream.

The cream is now ready for putting into the churn, having been thinned down, and temperature made correct. The most practical method of heating the cream is to place the receptacle holding it into a larger one containing warm water of not over 90. to 100. Fahr. and keep the cream well stirred until the desired temperature is arrived at. The End-over-End churns are the churns that recommend themselves best for the use of the farmer, although I am partial to the Alpha churn from which I have seen excellent work. When the end-over-end churn is used it must not be filled more than two-thirds full at the most and the churning should be slow at first until all the gas has been allowed to escape by the ventilator provided on the lid of the churn. A few turns of the churn and the ventilator should be released and repeated until no more gas is formed. The churning may now be continued without interruption, special care should be given to these ventilators, as if not occasionally taken to pieces and thoroughly cleansed, the cream collects inside and in time becomes quite green, and is bound to become a detriment to the butter. A very large number of churns of this type I have seen with the ventilators in a very bad state, the owners having tried all manner of means to clean them but not knowing that they should take them to pieces, could not clean them properly, The speed of the churn must be judged by the amount of cream in it And it should be so turned that the operator can hear the most work going on inside. On no account must the churn be driven too quickly or the cream will bong at either end of the churn and the butter consequently will not come.

Notice must now be taken of the small glass window on the lid of the churn, for as soon as the butter commences to come it will be seen on the glass in little particles. The moment this is noticed the churn should be stopped and a little brine water added, hich helps very much to separate the butter from the buttermilk and at the same time will protect the butter from being unduly knocked about and made soft. Churning must now continue slowly until the grains of butter have become sufficiently large, say about a pin head size. It is not advisable to churn larger than this and on no account whatever must the butter be churned into a lump, as in that state no washing can possibly remove the buttermilk, which if not thoroughly removed, will deteriorate the keeping qualities of the butter. The buttermilk is now drawn off, and the butter allowed to drain as thoroughly as possible, so as to remove all buttermilk which will consequently take less water for washing. The washing of butter in this stage must be done with care, as although it is highly necessary to wash it the more likelihood there is of the colour' and flavour being washed out, so that the washing should be carefully carried on. Add plenty of water, replace the lid and churn slowly a couple of revolutions and let off the water at once. Try if possible to pat the butter clean with two washings of strong brine, but more than three should not be used. That is why I prefer to allow the butter to drain well after the first milk has been drawn off. The advantage of washing the butter in this grain form is that every particle of butter can be separately washed and with the brine water every granule of butter comes in contact with the brine which has the tendency to harden the butter in summer time. In cold weather it is not necessary to use brine water, fresh water without salt answers the purpose equally well. Brine salting, however, does not give the butter sufficient flavor of salt for most markets and it is therefore necessary while working the butter to add a little dry salt say from a quarter to half ounce of salt to every pound of butter. Care should be taken to use really good fine salt. Dry salt is also necessary to improve the keeping qualities of the butter. After having the requisite amount of salt it must be evenly sprinkled over the butter and the whole well worked, by passing the roller backwards and forwards over the table.

It must be remembered that butter can only stand a little working, and in summer time this process of working often has the tendency to make the butter soft, and if this is the case, that the butter becomes soft and the salt not sufficiently worked in, it will be found very beneficial to put that butter away for a couple of hours, or even till next morning, when it will be found that the butter will have resumed its own natural consistency and the process of working can be continued. Care must always be taken not to overwork the butter, as If it is once well overworked and made greasy, the butter will never return to its own natural firm and nutty consistency although on the other hand the salt must be well worked in or the moisture will evaporate and leave the salt to crystallise which spoils the appearance and would also cause "mottled butter."

The butter is now ready for packing for market. The following short rough summary of notes may be found to contain information :—

1. Milk in as cleanly a manner as possible and protect the milk standing in the kraal by putting butter cloth over the buckets to keep out the dust and dirt.

2. Attempt should be made to improve the system of milking at present in vogue the system of the milkers moistening their fingers in the milk is bad, and it must be remembered that the richest milk comes last and that of the poorest quality first, therefore the calf with this system in vogue is taking all the best which is the farmer's profit and oft times detrimental to the health of the calf.

3. The use of a "Thermometer" in a dairy is essential, the "rule of thumb" working very often plays one false. A hanging wall themometer and a floating one for working with will be of tremendous help all through the year.

All cows are not profitable from a dairyman's point of view, therefore it is highly desirable that a series of testing and ultimate weeding out be instituted, from a milk producing point of view. At present many cows eat up the profit made by others, reducing the profits of the herd.

5. In cleaning wooden dairy utensils use nothing but hot water. Soda is often used, but it should be discontinued as it will cause the cream to "go to sleep," in churning. After washing the wooden things don't stand them in the sun, it will crack them.

6. Cream when ripening cannot be exposed to the fresh air too much, nor can it be stirred too often.

7. Too much attention cannot be given to the temperature in dairying. Correct temperature, by use of the thermometer, is the controling influence of milk and cream.

8. Don't work the water out of the butter on the worker first and then add the salt, add the salt at once, and work the salt in while you work the water out. By

the former you either overwork the butter to get the salt in or if you don't you cannot work the salt sufficiently in.

9. Try not to wash the butter more than is absolutely necessary. The more you wash the butter the more possibility there is of washing out its taste and flavour.

10. It is far better to stand butter and cream outside during the night, properly protected from dust, etc,

11. Neat and tasty make up of the butter and neat packing will help a lot in the sale of the article on the market.

12. It is not desirable to use any "preservative" for fresh butter, if the cream is well and properly ripened; the butter should keep long enough for the fresh butter trade without it.

13. It will be better always to churn the cream a little on the under ripe side than over ripe. Over ripe cream is the forerunner of rancidity.

Ornamental Berry Plants.

When the Floral display of the garden is getting over, the plants which produce ornamental fruits and berries begin to attract our notice, and it is then that we realise how effective they are for providing a bright contrast to the foliage around them. Many of the rose tribe, including the sweet-briar, will fruit abundantly on some soils, while the hips of the hardy Japanese rose (Rosa rugosa) are very large and grand for autumn decoration. The blooms should be left on for this purpose. The common barberry (Berboris vulgaris) is exceedingly ornamental, and there are other species with orange, purple, and white fruits. The evergreen thorn (Cratægus pyracantha) bears large clusters of scarlet berries, and others of the same family. C. lelandii, with large orange-red fruits, Oxyacantha paræcox (the Glastonbury thorn), and numerous others, all bearing handsome fruits. Cotoneasters are very ornamental during winter; they are often used for covering bare walls and fronts of houses, where the glossy foliage gives a good effect. even when the berries are not present. C. microphylla is the best of the genus for gardens near great towns, as it grows freely and bears fruit abundantly. even in smoky districts. C. simmondsii compensates for the partial loss of its leaves in winter by the profusion of brilliant orange red berries it exhibits. Sambucus racemosus, the scarlet-fruited elder, and the stawberry tree Arbutus unedo, with its strawberry-like fruit, are good hardy border shrubs. The butcher's broom (Ruscus aculeatus) as pretty red berries and dark green foliage. The viburnums of various kinds provide handsom clusters of scarlet, blue, and black berries. V. opulus is the wild guelder rose; Aucuba japonica, a popular hardy shrub, is very ornamental when well berried: but A. longifolia and some other forms often produces finer berries and in larger bunche Hymenanthera crasaifolia, a New Zealand shrub, bears white berries in the autumn Other white-berried plants are Cornus paniculata and Symphorisarpus racemosus the shrubby snowberry. Benthamia fragifera is a fine evergreen shrub, with large strawberry-like fruit, which lasts for some months. Shepherdia argentea and canadensis are very ornamental with silver-looking leaves and a quantity of edible scarlet fruit. Among the peat-loving plants the many forms of Pernettya mucronata are quite hardy and highly ornamental during the winter and spring months, when they are thickly covered with berries of various colors, and are particularly worthy of the attention of those who collect and cultivate interesting shrubs; the colors of the berries vary from white to almost black. Other American plants which thrive in similar soil are the gaultherias. G. procumbens is an ornamental dwarf plant with scarlet edible fruits following its white pendulous flowers. Then there is the spindle tree. Euonymus europæus, and Berberidopsis corallina or coral berry, with its minature scarlet cherry-like fruit very graceful in a border.

Many ornamental berried plants are useful for pot culture, and deserve to be extensively grown, as they last a long time, and can be used for decorative purposes when flowering plants would be very quicky spoiled. One of the most popular of these for general purposes is Solamnn capsicastrum. The plants can be raised from seed or propagated from cuttings early in the spring: the latter make more compact plants than the seedlings and generally set their berries better Skimmia japonica. though quite hardy, is a good plant for pot culture. If nice plants are obtained they will do real service for several years. as the plant is of very slow growth. The pots can be plunged in the open ground in the spring and allowed to remain until the berries are ripe in the autumn: the only attention they will require is occasional watering in very dry weathsr.

Spraying Fruit Trees in Blossom.

The practice of spraying fruit trees in bloom, as begun a few years ago, has led to considerable controversy as to the effect of such treatment upon the yield of fruit, as well as the injury to bees. As a result of the agitation a law was passed by the legislature of the State of New York prohibiting the application of poisons to fruit trees while in blossom. The effect of such treatments upon the production of fruit has been investigated at both the New York State Station and the New York Cornell Station. During the year 1900 extensive field experiments were conducted by the Cornell Station or spraying fruit trees in bloom, which showed no decisive results. The season was one of heavy crop and little disease, and a good or fair crop followed all treatments. There was no apparent injury to blossoms on trees sprayed when in full bloom.

The effect of spray mixtures on pollen and blossoms was studied by the State station both in the laboratory and in the orchard. In the laboratory. pollen grains were put into clusters which contained insecticides or fungicide, and the germination and growth compared with others placed in culture media without any fungicide or insecticide. From these investigations it appears that if before pollination occurs the stigmatic surface of the pistil should be covered either with Bordeaux mixture alone or with arsenical poison alone, of the strength commonly used in spraying orchard, there would be no germination of any pollen which might afterwards reach the stigmatic surface. and so fertilization would be prevented no fruit would be formed. Even the presence of lime alone, of the strength commonly used in spraying mixtures, prevented the germination of pollen. Bordeaux mixture was diluted in aqueous sugar solution to 500 parts. 200 parts 100 parts, 50 parts, 2 parts, and 1 part in 10,000 culture media into which various kinds of pollen were introduced. Even when diluted to 50 parts in 10,000 it prevented germination to a large extent, and where germination did occure the growth which followed was decidedly slow and the pollen tubes were dwarfed. When diluted to 100 parts, 200 parts, or 500 either no germination or practically none was found.

The effect of spraying mixtures on the apple blossom was examined, trees being sprayed in bloom and observations made at different times until the fruit had become as large as cherries. In the test where the trees where sprayed repeatedly, so as to hit as many as possible of the new blooms which opened from day to day, but few blooms survived the treatment and but little fruit was set, showing that spray mixtures prevent the setting of fruit when applied to blossoms soon after they are open. If the tree should have a scant amount of blossoms, serious loss might follow from such treatments. In some cases pistils which showed the presence of spray mixture on the stigmatic surfaces, awaited fertilization for several days, but eventually withered and died. It appears that in these cases the spray mixture inhabited the process of fertilization

Blossoms which had been opened several days before being sprayed seemed to have reached a stage where the treatment did not check fertilization.

Artificial Manures.

The Meaning of the Term.

The cultivation of a close aquaintance with the relationship between the different terms will serve to prevent buyers from being misled by flattering analytical formulas. As regards the nitrogen ingredient, the farmer will be able to avoid deception, by calculating on the basis that 17lb. of amonia always contains 14lb. of nitrogen, or, what is the same thing, 14lb. of nitrogen are equivalent to 17lb. of amonia. To give an everyday example, a manure offered as containing 4.5 per cent. of amonia actually contains 3.7 of nitrogen. In the form of sulphate of amonia 66lbs, are required to equal 14lb of nitrogen, so that a manure containing 3.7 per cent. of nitrogen would have to show 17.4 per cent. of sulphate of ammonia. Again, in the case of phospatic manures, the phosphates, or phosphate of lime, may be stated in order to convey an exaggerated estimate of the material; but here also a knowledge of the fact that 26 per cent. of phosphates is equivalant to 12 per cent. of phosphoric acid will safeguard the buyers against mistakes. Similarly, with potash manures, 172.2lb sulphate of potash and 149.2lb muriate of chloride potash represents 94.2lb. of pure potash: thus, kainite, stated to contain 12.5 per cent. of potash would contain the equivalent of over 23 per cent. of sulphate of potash, nearly 20 per cent. of muriate of potash.

Vegetables.

The latter portion of the past month proved most disappointing to gardeners generally, owing to the prevalence of hot drying winds and the almost total absence of any useful rains. The great advantage of mulching will now be apparent, and whenever possible, it should always be carried out.

The cutting of asparagus shoots should now cease, and the whole of the haulm should be induced to grow vigorously by supplying the beds with plenty of liquid manure during the summer and autumn months. Pumpkins, melons, squash, marrows and cucumber vines will also require plenty of liquid manure in order to force their growth, and where these have made good strong growth they should be carefully pinched back and pegged down. Tomatoes will now require attention, as the plants will require judicious pruning before being fastened to stakes or rough trellises. Remove all misshaped, blemished or diseased fruit, and destroy them at once. Search the foliage of the vines for any catterpillars, slugs, or snails which may injure the fruit at an early stage of growth. Any seedlings which may be planted out should be shaded for a few days, or they are likely to get burnt off. During this and next month the fruit is liable to attacks of disease called "Black rot," and which always develops itself after a very hot day or two. The smaller varieties of tomatoes do not suffer so severely as the larger, and coarser kinds and the disease or sunburn can usually be checked in some degree by keeping the surface of the ground between the rows well tilled by wide planting, mulching and supplying the vines with sufficient moisture during the hot weather. All ripe fruit should be "cut" off the vines and not "pulled," as the latter operation often breaks the vines. Attend to the destruction of all weeds and prepare fresh ground for cabbages and cauliflowers.

Beans—Sow largely of either the dwarf or tall varieties.

Cauliflowers—Sow largely for main crop, and shade the seed beds.

Cabbage—Sow a small quantity of seed

Carrots, Parsnip, Turnip—Make small sowings if required.

Celery—Sow largely in a semishaded position; plant out into trenches as required.

Cress, Mustard, Cucumbers, Melons, Pumpkins, Squashes and Marrows may be sown in small quantities.

Peas—A small sowing or two may be made.

Radish, Rhubarb, Spinach, Pop Corn and Sugar Maize—Make small sowings.

Lettuce—Sow a small patch in a moist and shady position, and keep the seedlings well supplied with liquid manure.

Parsley—Sow some seed if required.

Eschallots—Plant out in beds of rich soil.

Tomatoes—Make small sowings and grow the seedlings as rapidly as possible. Plant out during favourable weather, and, pinch back the vines to secure a sturdy growth and induce rapid fruiting

The Poultry Yard.

Pure charcoal or charred wood, when fresh, is excellent aid in arresting bowel complaints and is quite harmless. When hens have not had a variety, parched grain partly burnt affords an agreeable change and serves the same purpose as charcoal.

There is much sagacity in fowls, and there is matter of much interest to learn in regard to them. They learn the meaning of your words (not the adjectives) as easily as a dog, and by repeating the same words to them every time, you wish to drive them into a certain place, they learn very readily.

Too heavy feeding of green bone or fresh meat will cause worms, but they are excellent foods when sparingly used. For a flock of layers, an allowance of 1 oz. to each bird three times a week is quite sufficient.

The colouring matter in the egg is iron, just as it is iron that gives color to the blood. There is little doubt that the colouring compound of the egg is the same as that in the blood. It is easily assimilated, and eggs are regarded as suitable food for the anaemic person, as they present a concentrated and generally easily digested form of nutriment rich in iron. The iron compound of the egg has, in fact, been termed a "haematogen" because of it is propable that from it the blood of the chicken is derived. The amount of iron in the yolk of an egg would appear to increase with the intensity of its colour, and there can be little doubt that the richly colouring yolk of the egg produced by a fowl existing in healthy surroundings. The yolk of the best eggs is of a rich reddish color rather than a pale yellow.

Many an enthusiast has made a start at keeping poultry with the fairest prospect of success, with plenty of time, space and money at his disposal, and yet he has come to an abrupt end by falling into one of the many pitfalls that have to be avoided by poultry-keepers everywhere. One of the worst pitfalls—the easiesr to fall into—is that which is laid by early success. A man perhaps begins in a modest way, with a dozen or so of fowls on a few acres of ground; and he finds that they lay exceedingly well and grow to good size, and give altogyther much better results than he ever expected to get. Then nothing will do but he must keep many more poultry, and he buys up birds from all places, of good, bad, and indefferent breeds and quality. These he proceeds to put on the same land on which his dozen had done so well, and he expects to have as good a result with perhaps over a hundred. What is the result? To begin with, they are overcrowded and the ground quickly becomes tainted, and they will soon contract liver disease, and will in consequence give bad results in the way of egg production. It is a wall-known fact that the fewer fowls there are in a flock, the better individual results will be obtainable. A few fowls on fresh ground are sure to do well, and they find most of their food, so that a very small outlay will bring in good profit; but not so with a large number on the same ground. They need to be fed regularly, and they need more attention in every way, and everything of this kind diminishes the profit, so that unless there is ample space at disposal, it is wise to keep well within the limit and keep a few fowls, and get good results, rather than keep a large number with consequent extra expense yielding much poorer results. One of the most likely thing to happen when a novice takes steps towards stocking his land with poultry is, that he will purchase a fowl suffering from some contagious disease, which will quickly spread to all the other poultry. Under conditions of overcrowding this is sure to cause the death of many, if not all, of them, and this is another reason why a man should not be in a hurry to start poultry-keeping on too large a scale, especially when he has only a limited amount of space.

Be enterprising.

Name the farm.

Buy summer bargains.

A good dust bath is in order.

Don't do others—do for others.

Don't be full of fads and fancies.

It is backbone you want, not wishbone.

Rolled up sleeves are better than luck.

Energy is the hinge to the door of success.

Get rid of all the surplus old stock at once.

Now is the time to make arrangements for next year.

Keep your eye on the early moulters this year.

It won't hurt to buy a few good breeding hens cheap for new blood year after next.

This is the best method of introducing it, and the cheapest plan of buying it.

If you don't like whitewash, try cold water paint. It is easily applied, and very effective.

We are giving our chickens six acres to roam over, and don't they appreciate the fact.

Now please take those cockerells away from the pullets. I think we told you before

Not a bad plan to put all the reserved old hens in one pen and plant the others —the pens, not the hens—down to some greenstuff. Why not lucerne?

This is not a bad plan for fresh yards and buildings. These cong days one gets a fair amount of spare time. But don't neglect the growing chickens.

Reports on current season's trade are not too encouraging from the fancier's side, but eggs and poultry are bringing good prices right along. That is a good sign.

Have you too much milk? Put it before the hens and watch it is disappear. And you couldn't put it to better use. It goes right into eggs.

Prevention of Disease.

Poultry on the farm is apt to find and eat dead animals, for chickens are not choice about their food. It is much easiers to prevent disease than to cure it in the flock, but when it does appear it is usually caused by one of these three conditions; Improve the food, unwholesome surroundings, and neglect. Domestic fowls are not, as a rule, disposed to sicken, and the strict application of the old adage "An ounce of prevention is worth a pound of cure," is worth all the remedies ever printed.

Doctoring poultry is a losing business unless the bird be a valuable one. You must take into consideretion not only the actual expenses of the medicines, but the time it takes to care for sick fowls, the special preparation of feed, and the trouble caused by having the sick and convalescent birds aeparated from the rest of the flock.

A chicken that has had some serious organic trouble should never be used as a breeder, for experience teaches that although the bird may recover and be apparently sound and in breeding trim, the germs of the disease are transmitted to the offspring, and will, in the course of time appear in the next generation and cause trouble.

Absolute cleanliness is imperative. and as necessary for the well-being of the chickens as air, sun, and food, especially if they are confined. Never throw dead rats where the chickens can get them, and see that all animals that die on the farm are buried or burned. Hawks are a great blessing at large, but on a well-regulated farm they find little to eat and the sight of one sailing about, or perched on a fence reminds the farmer there is carcase that demands burial. The chicken house should be kept clean, and from time to time receive a thorough cleaning with white-wash and kercsine. Lice are the greatest pests and every means should be taken to keep the premises clear of them. A fowl teaming with lice cannot be in a healthy condition. An ample dust-box is a means by which the chickens can keep lice in abeyance. The drinking water should at all times be fresh and pure, and food should never be thrown on muddy ground, but on dry, clean boards or troughs,

Worth of Laying Tests.

From "The Australian Hen."

Down in Australia the laying competitions are running full blast, the feed being turned in one end and the eggs coming from the othar. Australia is developing some heavy laying birds and strains of birds and we can well begin to imitate her at this We have our poultry industry built on a sand foundation of beautiful feathers, and these are luxuries to the great class of fanciers who buy, who drop the hobby at the first signs of Prosperity's wane. Australia seems to be building her foundation solidly. Egg laying hens, anti-eggless hens, will always be worth hard cash and can lay eggs and lots of them in close times as well as good They will always be worth money as breeding birds, because like the heavy buttermaking cow, they will be able to pay a handsome profit as well as something for their keep Going on down in Australia at this writing are something like a dozen laying competitions, and pedigree breeding is at its zenith Read live, two hundred-egg hens are plenty and the value of each hen is increasing as an egg producer. There are fifty breeders in Australia who are receiving as much for their eggs per setting from their heavy layers as our best American breeders do for their birds' form and feathers. The point sticks out like a sore thumb and if you like you may hang your hat on it.

Cider Making.

Mr Vogel, of Longwood, S. A. says on cider making for home use;—'He had made thousands of gallons of cider in the old country but not in this State. Expensive appliances were not necessary to make good cider. Cleanliness in all stages of the operation of cider making was essential to success. Good, ripe clean fruit should be pulped with a wooden stamper in a wooden trough, then placed in the press and the juice expressed. The juice should then be placed in a clean barrel to ferment. The barrel should be kept quite full, a little juice being put aside in another receptacle to replenish the barrell from time to time while fermentation is going on. The barrel should be kept in a cool place. and as soon as fermentation is over should be bunged down. If the cider is to be kept for more than a year it will require to be racked at the end of the winter. Mixed sort of apples, so long as they are sound and ripe, give better cider than a single variety, though the Bestover is usually considered the best cider apple. To fumigate the casks before use, melt some sulphur and dip a strip of linen in it, put about one square inch of linen on the end of a wire, set it alight, and hold it in the cask until it burns out.'

The Dairy.

Never breed a 'kicky' cow. Your herd needs cows, not mules.

Never put a fine cow in the care of a poor milker. The milker makes or unmakes the cow.

Scoured milk affects the cream injuriously. Get the cream off in time.

The cows should be thoroughly acquainted with the milkers.

Dry salt cannot be worked into dry butter successfully.

Slowmilking frets the cow. Hasten the performance as much as possible.

Themanure coated cow is good proof thet her owner is in the wrong business. He should chenge occupations.

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- Seed germinate more quickly in Jadoo than in earth
- Greater perfection easily attained
- Suits all kinds of plants
- Is much lighter than earth
- Less frequent watering is required
- The flowers are larger, of richer color, and last longer
- No soil to mix; No manures required
- Admirably adapted for raising seedlings striking cuttings, and general conservatory and frame work
- Increases the size of the flowers
- Gives substance and enduring qualities
- Ensures brilliancy and intensity of color
- Specially suitable for hanging baskets because of its lightness and freedom from drip
- Bedding-out plants grown in Jadoo wil resist long-cotinued drought
- Clean to handle, and therefore specially suitable for window boxes, and for growing flowers in the home

DIRECTIONS FOR USE.

For Plants in Pots—Use it exactly as you would use earth. The only thing to be taken care of is that the Jadoo is pressed tight round the plant. Water the plant well directly after potting. Don't overwater afterwards. In sowing seeds and planting cuttings in Jadoo an even surface must be obtained by sifting the Jadoo, or by putting a little fine soil or sand on the top of it.

For Tomatos in Pots—Sow in Jadoo, and use Jadoo for two first shifts: afterwards, half Jadoo, half earth.

For Strawberries in Pots—Strike the runners in small pots full of Jadoo: use half Jadoo and half earth afterwards.

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From 3d per pkt.: plants 6d per pot.

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HOUSOLD RECIPES.

SOUPS AND GRAVIES.

One of the secrets of good economical cookery is having a supply of gravy always on hand. This is a point to which a careful cook will give attention. Our remarks on soup making apply equally to gravy making; both of them, for family purposes, are much more matters of good management than expense.

CHICKEN BROTH.

Make in the same way as Mutton Broth, cutting up the chicking and cooking the bones before putting in the saucepan.

GIBLET SOUP.

Stew one set of goose or three sets of duck giblets for three hours in two quarts of water, with a bunsh of sweet herbs, an onion cut up, and a little peper and salt. Soak for twelve hours a pint of haricot beans; boil them gently for about two hours: mash half of them and pass through a seive. Take up the giblets and cut them in small pieces: mince the liver fine: then return these to the strained gravy; add the beans and sufficient stock or water to form a thick soup. Put the water in which the beans were boiled, with them into this soup.

GRAVY SOUP.

Put a shin of beef, with the bone broken, into a gallon of water with two large and sliced and fried onions, two blades of mace, a large bunch of sweet herbs, and about forty berries of black pepper: stew well, and then take one the fat, heat it again with vermicelli, a head of cut up celery, some cayenne, and a little salt.

HERB SOUP.

Set half a pound of butter in a pan on the fire, and shake it round till melted: put in six sliced onions, and shake round well for two or three minutes: add two heaps of celery, two hands full of spinach some pot marjoram, two cabbage lettnces cut small, and some parsley. Shake the pan well over the fire for ten minutes and boil contents in two quarts of water with some crusts of bread for an hour, and add cayenne and salt to taste.

CREAM CAKES.

Slightly mix 3 oz. butter, add 2 ozs. of pastry flour, a teaspoonful of apricot jam. half a beaten egg and a tablespoonful of cream. Mix thoroughly and place small portion of the mixture on a baking sheet, Bake till light brown.

CURRANT CAKES.

Three cups of pastry flour, a little baking powder, two of sugar, one of butter one of currants, one of milk, eigh eggs. Beat the eggs, butter and sugar together until it begins to curdle, then add the other ingredients. Put into small buttered dish' and bake in a moderate oven.

E. B. COX & Co., Seedsmen, Etc. Corner Rundle St. and East Terrace

February Number of 1907

The Australian Gardener

Practical Flower and Vegetable Growing.

By W. S. Campbell.

There are numerous places, even in some of the dryest districts of the State, where water can easily be obtained, if not in the creeks and watercourses, at a comparatively shallow depth below the surface, so that there need be no excuse for the want of the very necessary vegetables. A simple system of irrigation can be carried out by anyone without difficulty, if use be made of the old, old method which has been in operation in the East for thousands of years, and which is in use in many places in the State, and has been, probably, since the Colony has been established. All that is necessary is a bucket, oil-drum, kerosine-tin, or any other vessel available, a long pole with a weight or counterpoise on one end and a support for the pole. In ancient times, and even in some parts of the East to-day, buckets of cowhide were and are used, but these are gradually giving place to kerosene tins. When visiting Pilliga scrub recently, I came across a settler who started work about 2½ years ago with practically no capital but energy and determination, and with no knowledge or experience in farming or gardening, but who soon cleared and grubbed about a quarter of an acre of land, rigged up oneof the water lifts referred to and raised a sufficiency of vegetables for his family and also a surplus to dispose of. He now has a considerable area under fruit trees and vegetables, and raises enough vegetables to supply distant neighbours at good prices. This, of course, is only a portion of his work, and I regret that I have not sufficient space to record his interesting story as an illustration of what perseverance will effect against apparently insurmountable obstacles, and by a young man brought up to indoor occupation.

Irrigating a Garden.

When irrigating, use as little water as possible, merely sufficient to keep the vegetables growing satisfactorily, and apply the water to the vegetables in furrows alongside the vegetables. To do the work properly the ground should be made as level as practicable: indeed, it is always advisable to make the ground level for vegetables whether it be irrigated or not. Overwatering causes excessive growth, and, consequently, the vegetable are watery and flavourless; and when anyone takes the trouble to grow his own vegetables he may just as well grow the very best he possibly can.

Vegetables

Beans, French or Kidney—This vegetable should be bearing well in all but the cold parts of the State, and the plants should, if well looked after and all the beans are picked before they are ripe or nearly ripe, continue to produce for some time; but before the plants show signs of ceasing to bear well, plant a row or two with seed. and the fresh plants will soon take the places of the old ones, which may be pulled up and used for manure or blanching celery, or for a mulch. Scarlet runners will bear for a long time if the beans are gathered regularly and before they are large and nearly mature.

When digging and manuring ground for the beans, mix sulphate of lime with the farmyard manure or dung if easily obtainable, or add some superphosate of lime, not a very great deal say 2 or 3 lb. weight, or even half that, in the dung you are likely to use to the perch. A perch measures 16½ feet x 16½ feet. It is always as well to measure the ground you are making use of for vegetables, or, indeed. for anything for that matter When manuring for beans or for any other kind of vegetables use farmyard manure avoiding the dung of pigs, and if artificial manures are used, apply some farmyard manure as well. If the farmyard manure is difficult to obtain, use raked-up leaves or any vegetable matter procurable.

Broccoli—A very little seed may be sown, and when the seedlings are large enough to remove from the seed-bed, prick them out in a small well-manured bed about 4 to 5 feet or so apart, and afterwards plant out in the garden, Before and after moving the young plants, water them well.

Cabbage—This vegetable is, probably, with the exception of the potato, the chief vegetable used in Australia, and it seems to be a necessity for the general public who cannot get on without cabbage No matter how coarse or rank it may be, cabbage must be had: and sometimes, in time of dry weather, cabbages are carried hundreds of miles. I have travelled with cabbages for more than 1,000 miles, and at the end of the journey they were not particularly choice. If I happened to inquire why cabbages and cauliflowers are not grown in certain places where soil is good and water plentiful, the excuse is that some bug, or caterpillar, or aphis, or something or other prevents the growing of the vegetable; but. as a rule, I formed the conclusion that want of energy is the true cause. Seed of cabbage may be sown, just in sufficient quantities to keep up a supply of plants for pricking out and planting out.

Cauliflower—Sow a small quantity of seed. Sow thin, and endeavour to raise good strong plants for pricking out. A great deal depends on good treatment of seedlings for satisfactory flower heads.

Carrots—Sow a little seed.

Cucumber—Seed may be sown in pots or boxes, and when the seedlings have made two leaves they can be transferred to open garden: or seed can be sown in the garden if thought best. Some liquid manure should be given to plants which are not making good headway in the garden. Rain, however, will do more good than anything else.

Celery—Sow sufficient seed to keep up a supply of plants. Prick out seedlings from seed bed and plant a few well-grown plants in shallow trenches. Selery is a semi aquatic plant and needs a good deal of moisture, and in order to grow it to perfection a good deal of manure is necessary. Earth up or cover up advanced plants that are nearly full grown

Cress and Mustard—Sow seeds occassionally to keep up a supply. The soil should be well manured, and if the weather is at all dry, frequent waterings will be necessary.

Capsicum—This may be planted out, or seeds may be sown if plants have not already been raised.

Egg plant—May be planted if seedlings have been raised and are large enough, or seeds may be sown if plants are required. In some of the early districts the egg-plant should be fruiting by this time.

Onions — Anyone desiring to grow onions may try a little seed. In harvesting onions be careful not to bruise them, and dry them off in a cool shady place. Onions of the best variety may be kept for a considerable time if they be allowed to mature properly in the ground, and are not taken up before they are thoroughly ripe and the leaves and stems are quite withered up.

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Peas—If the weather is satisfactory and moist and the ground in a good condition and not over dry, a few rows may be tried puring the month.

Pumakin—Seeds may be sown if more plants are required.

Radish A little seed may be sown.

Spinach—Sow a little seed.

Tomalo—Fruit should be ripe or ripening almost everywhere. All diseased fruit should be removed from the plants and burnt. Seed may be sown if tate planqs are rebuired.

Turnip—Snow a little seed from time to time.

Pelargonium.

Pelargonium is a family of plants consisting of annual, biennial, herbaceous, and shrubby species, which, with the exception of a few unimportant kinds, are natives of Cape of Good Hope. The original species are rarely cultivated now, except in botanical collections, although several are beautiful in their foliage and flowers. What are known as florists' pelargoniums are hybrids from various species, but, except the zonals, derived from ' P. zonale,'' a species introduced into England in 1710, and the ivy-leaved, from " P. lateripes, introduced in 1787, the parentage of the the present-day kinds is uncertain. The types of cultivated pelargoniums are: Zonal, commonly but wrongly called geraniums; show; regal or decorative: fancy; and ivy-leaved or climbing varities. There are also hybrids from various species not generally grown, and variegated leaved zonals,

The popularity of pelargoniums is not as great as twenty years ago, when the various horticultural societies catered specially for growers of these plants, but a distinct revival has occured in the last few years, especially in the zonal class. A few kinds of this class were always popular on account of their bright colouring, easy culture, and hardiness, and of late many fine new kinds, that are a marked advance in size of flower and truss, and of a much greater range of colour. have been raised and distributed. In a climate free from severe frosts they grow into large bushes quickly, and are scarcely ever devoid of bright effective flowers. They are also specially suited for pot culture, and will flower freely during the greater part of the year. The variegated varieties are more suitable for pot plants than the open garden. The show and decorative varieties are the most popular as pot plants, and some beautiful specimens are occasionally seen at horticultural exhibitions. They are also worthy of much more extended culture in the open borders, where, when properly treated, they rival azaleas and other popular plants in their wealth of bloom. The show varieties are hardier and neater in habit of growth than the regals, and, though smaller in the trusses and plainer in type of flower, are more floriferous. The regals at their best are splendid flowering plants, but are not often seen to advantage in the open garden. The trusses and individual flowers are larger than the show kinds, and the petals are frilled and of much greater substance. Fancy, or "ladies'," pelargoniums are a smaller growing type, producing neat trusses of bloom. They were very popular at one time, but are now rarely seen, except in nursery collections. A much more generally grown class are ivy-leaved or climbing varieties, some of which are among the most effective and rapid growing of climbing plants These are specially useful for covering unsightly places in the garden, but one drawback to their general value is their liability to become a harbor for snails.

Culture.

Delarganiums of all classes require sweet, well-drained soil, whether cultivated in pots, boxes, or open ground. They will endure a deal of drought without suffering greatly, but will not thrive if planted in sour, wet soil. The most suitable soil is a fibrous loam with sharp sand added for pot culture. Well-rotted horse or cow manure should be added to potting soil, but except in the poorest of soils no manure is necessary for open ground culture, especially in the case of the regal varieties. Fine specimens are occasionally to be seen growing in poor sandy soil, flowering splendidly in season; but when heavily manured, and liberally watered in summer, gross growth is produced at the expense of bloom. Plant may be set out from pots at any time in the growing season, early autumn being the most suitable. This is also the best time to transfer plants to different stations in the open ground.

Pinching the point out of the leading shoots is all the pruning needed to shape young plants, causing them to break into lateral growth. Plants may be retarded in their time of flowering, and also furnished into wellshaped specimens if thin and leggy, by pinching the points of the growing shoots in spring. After the flowering period, pot-grown plants should be placed in full sunlight, and water used sparingly, to ripen the growth. These growths should be thinned out and pruned back, leaving 2 or 3 inches of the shoot. To make nice specimens for the following season, shoots of equal size and at equal angles from the main stem should be retained, if possible. In the open ground the same treatment should be followed as far as practicable. In the case of zonals very little pruning is needed. An occasional thinning when the plants are becoming crowded, and pinching the top of an extra vigorous shoot, will keep the plant in shape.

Pelargoniums are propagated from cuttings of the ripened shoots, inserted at the pruning time. The cuttings should be about 3 or 4 inches in length, the bottom leaves removed, and the shoot cut cleanly across with a sharp knife closse below a joint. They may be inserted in pots, boxes, or the open ground. A sweet soil without any fermenting material is most suitable: sand placed at the base of the cuttings improves the ordinary chance of rooting. No manure whatever should be allowed near the base of cuttings of any plants. The cuttings when rooted may be potted and grown on for a time, or may be placed at once in the position selected for them. Cuttings of zonals may be inserted at almost any season. Grass sappy shoots should not be selected for cuttings. New varieties are raised from seed which is easily saved, and plants can be raised without much trouble. If good varieties are inter-crossed fair results may be expected.

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Drainage and Irrigation.

By A. S. Kenyon, C.E.

The following are extracts of a paper contributed by Mr. A. S Kenyon, C.E., Engineer for Agriculture:—The American teachers tell us that irrigation and drainage, or rather drainage and irrigation, are inseparable, drainage being the more important. Our experience, now that we have had some years of experience, is leading to the same conclusion. At Mildura, where irrigation on a large scale and to an extent replacing rather than supplementing the annual rain fall, was first put in operation, the early years did not teach the lesson, owing to the fact that, with other mistakes apparently unavoidable in the foundation of new occupations and industries, the varieties and classes of trees planted were not generally suitable either for the natural conditions or to give profitable returns. Seepage, of course, both black and white, early made its appearance; trees died out in the immediately affected parts, and general consternation ensued. Balm was, however imputed to the leakage from the channels only, and not to the lack of drainage. Now that all the early inferior trees have been got rid of, and the limits of direct seepage from the channels ascertained, much more definite knowledge of the effects of overwatering is available, and a considerable amount of attention is being paid to the drainage problem. Shafts have been sunk through the surface sands, loams, and clays into beds of drift, and drains of various kinds led into them. These are only partially effective, and there is evinced a decided tendency to install complete systems of the tile or agricultural pipe drains, absolutely on the lines of oldworld methods. The value of full-bearing well selected orchards in Mildura now reaches to over £100 per acre, so that the comparatively heavy initial outlay is not so severely felt. The spectacle, however, of a country like the mallee frontage to the Murray River, at Mildura, requiring subsoil pipe drainage is sufficiently startling, and must inevitably give much food for thought to those engaged in either carrying on or advocating irrigationin our arid areas. Mildura has, like all the mallee areas, soils ranging from almost pure sand to sandy clay, with beds comparatively near the surface of pure drift sand. The subsoil is frequently almost pure rubbly limestone (so called)—being generally the sulphate and rarely the carbonate form of lime—while in all cases lime in its varions compounds is largely present. The "water table," save in beds of lagoons or swamps—where water collects in the rainy seasons—is generally at a depth of 80 feet, or over. The rain fall is on the average about 12 in. per annum only. The contra is necessarily the volumes of water used in irrigating. These are, though probably not excessive, large, the average addition to the perennial crops, such as fruit trees being about 24 in. net, i.e., without allowing for water seeping from the distributary channels. Considering there are many light showers which do not get into the subsoil, the result of such heavy watering is equivalent to being in a zone of rainfall of about 40 in. per annum. Hence the raising of the water table to within a few feet of the surface, injury to the growth of the trees, and the necessity for subsoil drainage. Fruit trees show more quickly than any other crop the injurious effects of a shallow "water table." In the Goulburn Valley it will not be long ere drainage will be compulsory resorted to by the orchardists. The case with regard to flooding irrigation is more marked. Apart from the injurious effects of submerging to a greater or lesser extent the growing plant, and preventing the natural processes of atmospheric action —markedly injurious under the high temperatures characteristc of our summer season—the inadequate preparation of the land calls for the higher lands. For orchard lands, and for like crops where the capital value of the producing land is high, there is nothing to excel the tile or agricultural system. Its cost is high—as much as £6 or £7 per acre—though its seperal adoption should lead to the establishment of tilemaking works in the locality, and consequent cheapening of the tiles. In our shallow soils, with subsoil of highly clever nature, great care must be taken in subsoiling not to bring bring much—none, if possible—of the subsoil to the surface, as the subsoil, though chemical analysis shows it practically as rich in plant foods as the surface soil, is known by bitter experience to be useless to plants for many years. The experience of all other irrigating countries warns us that it is esential to drain to achieve the best results.—" The Register."

Income Tax.—We would call the attention of our readers to the "Income Tax Advertisement," appearing on another page.

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ARSENITE OF LEAD SPRAY FOR CODLIN MOTH.

E. E. Pescott, Inspector, Vegetation Diseases Acts, Bendigo.

Owing to the prevalence of codlin moth, it is now a recognised fact among orchardists that the only adequate method of coping with the pest is to spray the trees and fruit with some arsenical solution, whereby the young grub may be poisoned before entering the fruit. Paris green was amongst the first sprays used for this purpose. This was afterwards superseded by arsenite of lime. Latterly, however, in the Bendigo district, as well as in other places, the arsenite of lead spray has become very popular, and has been used with excellent results. The majority of growers using this spray now consider it superior in every way to arsenite of lime or to Paris green. The formula is as follows :—1 lb white arsenic, 2 lbs carbonate of soda crystals, 7 lbs acetate of lead, and 360 gallons of water.

To make the stock solution, the arsenic and soda should be boiled together for twenty to thirty minutes, in half a gallon of water. The acetate of lead should be separately dissolved in one gallon of warm water. When cold, the arsenic-soda solution should be gradually stirred into the lead acetate solution till both are thoroughly mixed. If mixed when warm the union of these two solutions results in extreme effervescence, and great care should be taken that the froth does not run over the vessel used. When cooled. the mixture becomes liquid again, and may be stored away for use. There will be twelve pints of the stock solution, and if this be placed in twelve pint bottles, one bottle can be used to every 30 gallons of water. The stock solution will keep indefinitely.

This spraying solution is considered superior to arsenite of lime for many reasons. Provided the water be strained the mixture runs freely through the pump, and the whole of the contents of the cask may be sprayed without once choking or clogging the nozzel. This point alone should make the spray a popular one. In the arsenite of lime spray trouble is often experienced in obtaining freshly-burnt lime, and the resultant mixture is not as perfect nor as effective as it might be. The absence of good lime, too, might have a caustic effect on the foliage. This spray adhears better to the foliage and fruit than other sprays, and consequently less material may be used for each tree. Again, the trees are not rendered unsightly, as with the lime spray, and the fruit does not require cleaning after picking. In spraying with arsenite of lead, the spray should be misted finely on to the trees; the liquid should not run down the limbs and trunk It is a mistaken idea that the running spray will kill any grubs that may be hiding in the crevices of the tree. The arsenite of lead spray does not kill by contact; its effect is to poison the grub that eats it. This spray also keeps down the pear-slug pest.

In the season of 1904-5 Inspectors Cock and Pilloud conducted a small experiment at Dunolly with the three arsenical sprays, viz., Paris green, arsenite of lime, and arsenite of lead. The rows of trees were selected, which was as follows, speaks for itself:—Paris green, 75 per cent: arsenite of lime, 82 per cent: arsenite of elead, 90 per cent. of perfectly clean fruit.

Some growers, in districts where Black Spot is prevalent, add 1 lb of bluestone to every 50 gafllons of this spray. Messrs J. Clarson, on Lockwood, and J. Hargreaves, of Emu Creek, used this combination last season with excellent results. The latter grower estimates that, by the use of the arsenite of lead spray, he last season obtained 98 per cent of fruit, perfectly free from Codlin Moth. Mr. Hargreaves sprayed fourteen times, and many of his apple trees, loaded with fruit were absolutely withont an infected apple Messrs T. Somerville (Strathfieldsaye) H. Keck (Bendigo), H. Windsor (Morang) H. Winkelmann (Campbell's Creek), and J. Douglas H. McLean and J. Hellas, of Harcourt, as well as many others all used this spray last season with excellent results And, as an instance of its continued popularity, a large majority of growers in the extensive apple and pear growing district of Harcourt has this season ordered chemicals for spraying exclusively with this spray,

In conclusion, it may be well to repeat the necessary additional action to be taken in order to keep the orchard free from this pest; Scrape off all loose bark. Fill and plug all holes and crevices in trees Leave no cracks or broken ends of limbs. Clear away all weeds and growth around trees. Have the bandages examined thoroughly and regularly. Keep fruit houses frequently cleaned and examined for grubs. Allow no second-hand cases in the orchard Destroy all bags and packages likely to have come in contact with infected fruit. Gather and destroy all fallen fruit. Growers are also urged to accurately measure for themselves their pump casks or barrels, as the reputed measurement is very often the result of guesswork, and hence inacurate. The result is that the spray is either ineffective, or the tree is burned by the mixture being too strong.

The arsenite of lead spray is not at all an expensive one. With the cost of chemicals at the present ruling rates, it works out at about 6½d per acre for each spraying, or at a cost of 4s 4d per acre for eight sprayings, exclusive of labour.

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The Orchard.

By James Lang.

The usual routine work of the orchard should be pushed on: keep the scarifier going so that weeds may be destroyed and the surfase loose and open. From reports to hand from various parts of the State, the fruit crop on the whole promises to be an average one. Frosts in the Bendigo and Castlemain edistricts have destroyed a quantity of fruit, especially in those orchards which are situated on the banks of creeks and other low situations, consequently the average in these localities will be reduced, Complaints are also being made about the non-setting of the London Pippin; this is one of those varieties which bloom late, and is therefore in danger of being caught when in bloom by the hot winds. This happened last year, when the hot wind on Cup day destroyed the whole of the crop it also happened this year, although not to the same extent, and owing to this cause there will be extremely light crops of this variety all over the State. Pears are an average crop, William's Bon Cheretin especially being a good crop; but peaches. apricots, and plums are below the average.

Reports of an unusual number of trees —cherries, apricots, and peaches—dying, have come to hand This is no doubt caused by the exceptionally wet winter xperienced north of the Dividing Range; in many orchards the roots of the trees were standing in water during the latter part of the winter. This shows the necessity for thorough drainage to carry off the stagnant water from the roots.

Spraying for the codlin moth will take up a good deal of time during the month. The arsenite of lead spray is being much used in the Bendigo and Castlemain districts, and seems to give satisfactory results to those who use it.

Vegetables.

The hoe or other cultivator should be bept going between rows of growing crops. Water should be applied during hot, dry weather before the young plants actually suffer. Water should not be applied overhead on hot days. Tomatos should be tied to stakes or trellis as growth develops, and lateral growth removed. A few of the strong growing varieties, such as Ponderosa, set their fruit better when trained on a trellis at sharp angles from the upright; tied to stakes, or trained perpendicularly, they grow too vigorously to fruit well. Shy bearers are also stopped occasionally at a joint above the one carrying the flowers, the check causing the fruit to set. Should the larvae of the tomato moth attack the plants, should be sprayed with a solution of Paris green, at the rate of 1 ounce to 12 gallons water; milk of 1 pound fresh lime should be added, and the mixture kept thoroughly agitated while being applied.

Seeds may be sown for a succession of various saladings, peas, beans, etc. Plsntings may be made from former sowings, choosing a dull day, if possible, for the purpose.

The Poultry Yard.

Turkeys—Care, &c.

(By H. V. Hawkins, Poultry Expert)

In response to inquiries for hints on the management of turkeys and the cauise of many fertile eggs not hatching, I intend to briefly outline a few points of, primary importance in connexion with their habits, etc.

In the first place the Turks had littlet anything to do with this breed, so thas the name "Turkey" was not given thi excellent table bird by them, but rather by the Americans. Personally, I am incline to the belief that the Mexicans discovered the wild turkey, but the credit for vastly improving and domesticating it, and raising the breed to the present standard of perfection rightly belong to the Americans. In any case I am content to know that the Americans have farmed turkeys for so many years, and have wonderfully changed their type, colour, and habits, with such splendid results.

The question so often asked is, "Why turkey farming has been so long neglected here?" Those who have done most fo the Commonwealth in this regard, have been the squatter, who, in many cases, merely have a few at first to supply a change of menu from mutton. They have little time to devote to the care of these birds, still, in most cases, the result is a great success. The reason is not difficult to find, *i.e.*, turkeys being great travellers and foragers, must have acres. They may be seen in large flocks in the Riverine miles from the station homestead. They have a decided objection to being fed on wheat morning and evening. I have taken particular notice of their method of feeding, and have invariably found that they had good appetites when variety of food abounded, *i.e.*, first a seed, then an insect; possibly a grasshopper would cross their track, and a bad time the grasshoper would get when a flock of 200 bronze turkeys set sail.

Beet Breeds to Farm.

The bronze turkey being large, and the flesh so beautifully white and succulent, is perhaps the breed *par excellence*, yet it should be always borne in mind that the 40 lbs. gobbler is not the most profitable to breed. Birds of 14 and 18 lbs. weight are usually those which consumers prefer. provided sufficient flesh is presented to the chief by which he can satisfy a fairly large number of visitors. The black turkey gobbler of good size, and two years at least, and unrelated, and twelve or thirteen large bronze hens (two year old), make an ideal breeding flock. Many add a very large bronze gobbler, which is unsuitable for the hens, non-fertilization of eggs being the result. Each hen averages eighteen to twenty eggs before going broody.

Turkeys need little attention if kept away from fowls and ducks. Turkey farming pays best by itself, and the northern areas are more suitable than the southern. They lay their eggs in a secluded spot: a cement barrel laid on its side with a brick each side to prevent rolling, and a branch of a tree partially covering its entrance, is all they want to encourage them. It is best to permit the eggs to remain in the nest. The hen is usually very cautious on entering and leaving her nest, and seldom breaks an egg, unless she has not had sufficient shell formers in her diet. See that she gets ample cinders, burnt bones, and charcoal, and, when possible, plenty of dry oyster shell. Much depends on the farmer whether she breaks the egg and hatches her young.

Making Nests, Etc.

Always provide the hen with an inviting spot and plenty of green grass for the nest: a too dry nest often causes trouble —lack of moisture. In districts in the far north I have strongly urged that one side of the barrel be removed: make the nest on the ground, oval in shape, and keep a fair amount of moisture around the nest. Give the hen opportunity to dust herself in a damp spot; she will get it if possible, and there will be little fear of dead chickens in the shell unless breeding from immature birds is practised. A gobbler at twelve months is not the best. He should be at least two years old; likewise the hens. Above all, introduce fresh blood every second year: this is of great importance in the raising of turkeys for profit. Again, a vigorous gobbler will fertilize all the eggs of a dozen hens in less than four weeks: that is to say, suppose a turkey hen, after she has had the companionship of her mate for say a month, lays seventeen eggs at a stretch, the whole batch laid prior to her brooding will be fertilized. In short, you need only borrow a good gobbler for one month in the season, provided you are not hatching late chicks. See that his toes are not like a raizor, otherwise serious results may follow; I have, this season, stitched three beautiful bronze hens, the backs of which had been laid bare.

Of one thing there can be no doubt, turkeys do best in the fresh air, and will not stand coddling; they should be housed in large airy sheds, open completely on the eastern side, with perches fairly wide (three to four inches). The straighter the breast bone, the better satisfied wil the consuming public be, and narrow perches mean crooked breast bones. Do not place the perches too high, especially where the ground is hard or stony, as turkeys are, like fowls, subject to bumble feet, which often spoil hens for a whole season. I am quite convinced that turkeys must be encouraged to accustom themselves to shed roosts; they prefer the limb of a tree or the top of a harvester, but that should not be. A little coaxing for a week, a kindly bucket of oats by way of encouragement, will do much to form the habit of coming home each night at dusk instead of their straying away, or being found in the field in the morning with their heads off—the work of foxes. which are very troublesome in most districts.

Feeding Turkeys.

The adult birds usually find most of their own food, yet it is an absolute necessity to feed the flocks when natural foods are not available, *i.e.* in autumn and winter they get down in condition if not attended to, although they have unlimited range. Insect life is then scarce, grass is of poor quality, and is also usually wet, and the consequence is they scour and often die from the effects. Barley meal, maize meal. and bran (one part each), with a fair amount of chopped up boiled rabbit, and when available a few sliced up raw onions, all mixed with the soup in which the rabbit or other animal food has been boiled, should be used. Mix as dry as possible, turkeys do not thrive on slops Curded milk is much relished, and is a splendid flesh former, and a whitener of flesh; nothing is more objectionable than a fatty breast. Too much maize feeding, or a constant supply of wheat, will not improve the colour of the flesh. Oats are by far the best of the grains to assist in keeping down fat.

Fresh Water—Always provide fresh clean water daily, and keep the vessel out of the sun: neglect in this regard will cause losses by disease. Add charcoal in case of bowel disorders; it is an absolute necessity in successful turkey raising.

Grit—They must have an unlimited supply of grit, without which they suffer much from indigestion. Small pebbles coarse sand, and peices of broken crockery and smashed up burnt bone all aid in digesting their food: this is especially required prior to their going to roost

Boiled Grain—There is no necessity to boil any grain; they are better without it, and prefer the hard food to that of a sloppy nature.

Egg Producers—The so-called "egg producers," mentioned by some of my correspondents, would, if fed in sufficient quantities, in some cases assist egg production, but at what a cost? The best egg producer is insect life, and when not available in sufficient quantities, add the best substitute, i.e., beef and mutton scraps, sheep or bullock's liver, or rabbit, soaked in cold water overnight, and then lightly boiled. Use the liquid for mixing the morning meal and avoid making it pasty, but use the hands well in mixing hard and friable. Curded milk when available should be a magnificent aid to egg production, and when topping turkeys off for market, give them as much as they will take, as it softens and whitens the flesh: milk fed turkeys eat like six weeks old chickens.

Young Turkeys—For young tuaeys many successful raisers use hard boiled eggs mixed with stale bread crumbs, and a little fine oatmeal, moistened with skim milk (crumbly, not sloppy). This is given the very young chicks for the first week, after which eggs should not be given, but plenty of finely pulped raw onions added, and the milk curds, and a little dry bone meal and charcoal mixed well through This not only keeps their bowels in order but supplies the additional phosphoric acid necessary to quick growth of bone, and increases stamina, thus decreasing the chance of "leg weakness," a complaint to be guarded against. Encourage the very young turkeys to eat millet seed at night, and after two weeks feed on hulled oats for best results, until old enough to have a little wheat or oats.

Keep the young turkeys dry. Nothing kills sooner than long wet grass: once they get a soaking, death may be expected Always keep them in confined pens, well sheltered from wind and rain. Do not on any account allow them on the dewy grass, but keep them in until the sun has dried the grass off a little. Examine all young poulits for vermin, which is so troublesome at the back of the head and near the vent; hundreds of bird die through no other cause. The pest is similar in habits to the tick. holding on and penetrating the skull. The young birds should be freely dusted with insectibane, and a little carbolic paste applied at the back of the head. Neglect in this matter is the cause of many deaths. The fact that late hatches do not develop as fast as the early hatches is of importance to all farmers of poultry, be it turkeys, ducks or fowls. The early chicks may be relied on to produce the best results. The longer a hen lays in a season, the more impoverished she becomes as a result of hard work. Thus we find the embryo becomes smaller and weaker, and if from these late poults we get bad symptoms, first catarrh, often the precursor to a more serious trouble, *i.e.*, roup, or to make it clearer, a running at the nostrils is observed, and later, symptoms show a swollen head, from which arises an offensive smell.

Onion tops, dandelion, rape, and raw onion finely cut, and white clover, are without doubt the favorite green foods with turkeys: and they are rich in mineral salts, and valuable as correctors of blood From five weeks old and on, this can be given mixed in the morning food (pollard, bran, etc.)

If the pasture has a variety of grass, so much the better, as they prefer variety but if it be a dry droughty spot, sow lucerne in a 1-acre enclosure. After it becomes established, it will keep you supplied with green summer food, being rich in protein, and also an egg producer.

Area—One hundred adult turkeys could easily be run on five acres, but, unless you are compelled to fence, I would advise giving them full liberty, as they will not require so much feeding. It is rather difficult to say whether three feet and three added wires on top will suffice to keep them in; much depends on the way they have been brought up. If at all wild fifteen feet would not keep them in without doctoring the wing joint

Domesticated poults are usually tamer than Leghorns, and give less trouble in this respect. I would certainly recommend trying 3-ft. wire, with four plain ones above, but care should be taken when putting in posts. Do not use too thick a post, for this reason, that if the posts are "table-topped" they allow ample room for a gobbler to fly on to; the others will soon learn the habit. Further, wide topped posts are source of great danger where foxes are plentiful. Run the wires above the thick posts, attached to thin hardwood batten One morning I saw fourteen headless turkeys in a 5-acre enclousure at Bunninyong, and traced Mr. Reynard's hair on a thick 6-ft high corner post, which was 25-inches in circumference at top, and unbarked Had the barbed wire covered the top of the fence this loss would not have occured.

The main thing in marketing is to top off and to grade the birds according to size, not putting three big gobblers in a crate with five or six wasters. Mark your crates first, second, and third quality, and you will be quite satisbed when account sales come in. Make the agent your friend, it creates confidence, and will do his best for you; the farmer who is always chopping and changing about makes a serious blunder. Keep in touch with your salesman: tell him how many birds you will have for disposal, and ask him to wire you when a scarcity of white flesh exists. Don't rush him with twenty crates when ten will suffice; the agent usually knows when to advise you to send and the cost of a telegram often pays.

Fruit Preserving.

(By W. J. Allen.)

In districts where apricots are grown for drying and canning, some will be found ripe enough for handling this month. To make the best dried fruit, allow the apricots to hang on the tree until they are perfectly ripe—but not over-ripe, or so that they cannot be cut in halves with a sharp knife and still retain their shape. When the fruit is fairly soft, pick it carefully into cases: this will, in all probability, necessitate going over the trees five or six times. As soon as possible, have the cases carted to the cutting-shed, where the fruit should be carefully and evenly cut in halves (not pulled apart) and the stones removed. Place evenly on the trays with the outside up, and as soon as possible remove each tray to the fumigator, where it may remain with door closed until the fumigator is smfficiently full to start sulphur burning. This is of the utmost importance, as when the fruit has been once cut it must not be exposed to either sun or wind

When everything is ready, place sufficient sulphur or brimstone to fill the room with fumes for about three hours (from 1 lb to 2½ lb according to size of room). but if possible, allow the fruit to remain in the sulphure-room from eight to ten or twelve hours, or until the cup is full of juice. It can then be taken out and placed, either in the sun, or in the evaporator, as the case may be, immediately. If in the evaporator do not place the fruit in the hottest part to begin with but gradually work from the cooler to the hotter part, say, starting at that part which is 140 degrees, and finishing off at 160 or 170 degrees Fah. In this way the fruit will dry in from fourteen to eighteen hours; but the greatest care must be taken not to allow it to burn; and some practice will be required to tell when it is just dry enough

If the fruit is to be dried in the sun, use wooden trays 2 feet x 3 feet, which are made for the purpose, with 2½ inch cleat at both ends These are easily handled, and can be used in connection with all fruits

In cutting the fruit and placing it on the trays, or so that the cleats at the ends will be resting on the ground, thus allowing a current of air te pass underneath and assist in the drying process If the weather is hot, which it usually is about Christmas time, it will take from two and a hglf to three and a half days to dry the fruit, which will require to be sorted over so that any which is not quite dry may be put on trays and allowed to stand for another half-day or so The dried fruit should be taken from the trays and put immediately into clean calico bags, and securely tied so that the moths may not reach it.

When sorting over in the above manner, any fruit which is small or of bad apperance should not be mixed up with the good, but sorted out and marked as inferior, while the good also can be marked accordingly When the fruit is dried and bagged, it should be at once stored in a cool dry place if exposed to heat it will become hard, lose in weight and deterioate in quality

If by any mischance the moths have got into the fruit and deposited their eggs therein, an effectual means of cleaning o ridding such infested fruit is to dip it into boiling hot water for a few seconds, and thed spread in trays and allow to dry by exposure to the sun's rays for a few hours. Fruit thus dipped will not retain its lolour long, consequently it should be disposed of quickly

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The Flower Garden

General gardening work of importance during this month is the continuance of surface cultivation, watering when necessary, and staking and training growing plants. Where water is needed it should be applied thoroughly, a light surface sprinkling being of little service, and often decidedly harmful, as roots are encouraged too near the surface, where they will be injured by cultivation. A good soaking is necessary, and the surface should be broken finely again as it is drying. Plants that specially need water during dry werther are those newly planted, and surface rooting kinds, such as ericas and ezales. When free growth is being made the plants should not be allowed to suffer from lack of water, but those with natural foliage rerely require it at this season, except under specially severe conditions Plants such as violets, primroses, and other winter and spring flowering species, require no water, being in a state of comparative rest at this time.

After the spring flowering is over, roses should be allowed to rest—*i e.*, should not be forced into growth by the free use of water. Ordinary surface cultivation will suffice in the case of established plants or in very dry situations a mulch of stable manure. Weakly growths may be cut away, and ample room should be allowed for the development of remaining shoots.

Dahlias should be planted this month. If beds have been prepared for them, the the plants may be set out in lote districts early in the month. The end of the month is preferable for the metropolitan district, and early districts where there is no danger of early frost. Divisions of the tubers may be set out a little later than young green plants from pots, and then flowers simultaneously with them.

Care should be taken not to break the "ball" of soil when planting green plants from pots, and some shelter should be provided for a few days should the weather be hot. A pot inverted over the plant, or a rough shading of bracken or such material, is sufficient. Plants in pots should be thoroughly watered before being "knocked" from the pots, and the young plants carefully watered, if need arises for a few days.

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Bulbs for Autumn Planting.

The season is at hand for planting various bulbs, so that a few instructions as to planting and culture may be acceptable to the uninitiated.

FOR POT CULTURE.

Hyacinths, daffodils, narcissus, etc., may be grown in pots, say three good large bulbs or six smaller bulbs, in a six inch pot, well drained, using fairly rich soil. Keep in a cool and partly shaded place, such as south side of a paling fence.

Anemones make fine ornaments for winter decoration by growing, say three bulbs, in a 9 or 10 inch pot, well drained. Freesias should have eight to twelve bulbs in a six inch pot.

FOR OUTDOOR PLANTING.

Light soil is preferrable for bulb culture, but where this is not available heavier soil may be made more congenial by placing some lighter soil or sand round and over the bulbs in the trench at time of planting. Soil that has been manured for a previous crop is the most suitable; failing that, if manure be required only well decayed manure should be used. A light mulch of manure on the fresh broken surface after planting keeps the soil cool, and makes the work of removing weeds and loosening the surface easier later on.

Double Anemones

Turban Ranunculus

Do not water bulbs in the ground in the autumn to start them, but leave this part to the rain.

Hyacinths, daffodils, polyanthus narcissus, jonquils, snowflakes, gladiolus, Watsonias, tulips and similar sized bulbs will require to be planted four inches deep. Larger bulbs, such as amaryllis, just covered.

Ranunculus, anemones, ixias, freesias, camassia, alliums, crocus and small bulbs should be planted two inches deep.

Ranunculus and anemones do not require too rich a soil. We have seen them do remarkably well in poor soil with a fair rainfall.

Varieties of Bulbs.

In anemones there are various shades of blue, red and white.

Ranunculus (turban), scarlet, crimson, white, yellow, golden, citron, green and scarlet, and black.

Ranunculus (Persian), the foregoing colours and shades of purple, brown, etc.

Hyacinths, single and double blue, red, white, pink and shades

The single hyacinths give the finest and largest trusses of flowers.

Daffodils, yellow, selfs, such as Trumpet Major: bicolors, such as Empress, and intermediate, such as Princeps, varieties being too numerous for these short notes, in reference to the seed shops and their lists will enlighten the readers.

Daffodils—Emperor, Empress.

Single Hyacinths

Pansies.

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March Number of 1907

The Australian Gardener

Flower Garden.

ROSES

Anyone interested in the budding of roses may be able to experiment during this month, providing there is sufficient rain to cause free growth in the stocks whereby the bark rises easily. A little practise is necessary to cut out the wood eyes of the scion neatly, so that as much as possible of the inner layer of bark may be exposed, so that it can come in contact with the inner bark of the stock. Insert the wood bud in the shady side of the stock and protect with a little cotton, or moss or something of the sort, so as to keep the bud and budded portion of the stock rather moist. Otherwise, if the dry weather sets in, the bud may shrivel up before a union is effected.

During the month roses that have been grown in pots may be planted—not old pot-bound stuff, but good young plants If they are watered now and then, and are well looked after, they should grow into very satisfactory plants during the remainder of the summer and autumn.

* * *

BY J. CRONIN.

The most important work is the conservation of moisture in the soil, and the application of water where necessary. As frequently stated, there is no more necessary work during the summer than the frequent disturbance and pulverisation of the surface. The hoe or cultivator should be used as often as possible, especially after rain or watering, causing the production of an earth mulch 2 or 3 inches deep. Established plants will require little water under such conditions, except during periods of severe heat and drought or in exceptionally dry places.

The value of thorough drainage may be seen at this season. Roots of plants growing in sweet well drained soil penetrate to a much greater depth than those that are growing in soil water logged in winter and spring, and are thus enabled to acquire moisture and plant food from a much greater depth and area, being also less liable to suffer from fluctuations of temperature. Water should be applied in sufficient quantity to moisten the soil and the surface near the plants should be either mulched or broken up finely with the hoe while drying.

Dahlias.

Newly planted dahlias and other tender plants will require special attention in watering, shading and cultivating, until thoroughly established and growing freely. Dahlias should be mulched with long manure and securely staked as growth progresses.

An occasional syringing or overhead sprinkling in the evening of days of great heat will benefit the plants and also check red spider, the principal insect enemy of the dahlia.

Chrysanthemums

grown for exhibition blooms should not be allowed to suffer from lack of moisture during hot dry weather. Under ordinary weather conditions, if the beds are well drained and properly prepared, hoeing the surface occasionally is sufficient to keep the plants growing steadily. The plants will probably produce a bud in the points of the shoots, and break into lateral growth early in the year. This bud is known as the first crown and should not be saved. All shoots but the leaders should be removed and great care should be taken that these are not damaged by caterpillars, etc., as on these shoots the finest buds are produced. The flower bud is rounded, and occupies the centre of the shoot, being accompanied on either side by growth buds. The latter should be removed as early as possible without damaging the flower bud, which is known as the second crown bud. No liquid manure should be applied to plants in prepared beds before the end of last month.

Carnations

may be increased by layering the growth after the flowering period. The layers root readily in light soil well supplied with moisture Flowering shoots should be removed from plants of tree carnations designed to bloom in winter.

Seeds

of pansy and Iceland poppy should be sown to supply plants that will flower in winter. A special shade or cold frame should be provided and the seed sown in light soil in boxes or in shady borders. One of the best strains of pansy procurable is Bath's Empress. A fair proportion of finely marked fancy varieties of large size may be expected. Iceland poppies are easily grown, and are specially valuable during winter and spring for garden decoration or as cut flowers. A new strain producing flowers of different shades of pink is advertised, and should be worth a trial The colors of the older varieties are white, yellow and orange.

Bulbs.

Ground should be prepared for the reception of bulbs and corms of winter and blooming plants, such as Narcissi. A late batch of corms of gladioli may be planted for autumn blooming: the ground should be deeply worked and well manured for their reception. Gladioli that are showing flower spikes should be staked and liberally watered.

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Kitchen Garden.

BY J. A. CRONIN.

As in the flower garden, the principal work should be the maintenance of a moist soil and watering where necessary. Land should be prepared for future cropping as soon as cleared of crops. A liberal dressing of stable manure should be incorporated and thoroughly mixed through [illegible]

The best way to raise a stock of herbs such as sage, thyme and marjoram is to procure a few plants and propagate them by divisions or cuttings. Seeds of several herbs, including those mentioned, are procurable from Adelaide seedsmen and may be raised with little trouble, but are some time coming to maturity. They would require careful culture during the first season. Old plants may be divided during autumn and planted in rows to admit of horse or wheel hoe cultivation if a quantity is required.

The land should be well drained and well worked and manured before planting. A moist but sweet situation is most suitable.

Beds should be prepared for the reception of seeds, and seeds of turnips, cauliflower, French beans, peas, and various saladings should be sown. Early varieties of potatoes may be planted for an autumn crop and also plants of cabbage, celery, etc., from former sowings.

BY W. S. CAMPBELL.

If abundance of cow, horse and sheep dung be used, the effects of dry weather may be minimised, for a large application of vegetable matter will assist to keep the soil moist in very dry weather. The use of artificial manure tends to dry the soil, except perhaps nitrate of soda: but of course the application of this alone would not be sufficient on most soils.

The collection of abundance of farmyard dung for all the needs of the garden should be an easy matter on a farm and also for use as a mulch on the surface. All this kind of manure should be well rotted before use, for not only are its valuable manurial constituents made immediately available for the vegetables to feed upon, but many of the weed seeds which are sure to be present will be destroyed.

There are many kinds of vegetables such as beans, peas, old tomatoes, etc., by this time past bearing and of no further use unless seeds are required, but it is not good economy to retain seeds of old almost exhausted plants. A few plants should be set apart for the purpose and kept for seed production only, bearing in mind that many kinds of vegetables will become crossed, and therefore the seeds will be unreliable and not true to variety, if various kinds grow close together. Tomatoes are very liable to be crossed by visiting insects. To ensure true seed the different varieties should be kept as far apart as possible and certain flowers be protected and pollenated by their own pollen.

The planting of potatoes will be a matter for consideration, according to climate, for it may be altogether too early in some districts. There seems to be a considerable amount of uncertainty as to varieties—that is, as to their proper names—and there is very good reason to think that in some districts varieties have become seriously muddled up and wrong kinds are distributed. A mistake is not infrequently made in the well known Early Rose. Many specimens come to the department named Early Rose which are not true to name, and it is the same with other varieties. Mr Dunnicliff of the department is taking a great deal of trouble to put things straight, and he has now in hand a great many varieties on trial, and I have no doubt he will succeed in arranging their proper names, and I hope that before very long all our experimental farms will be provided with increased stocks for distribution.

Beans—All sorts of the kidney or French beans may be sown as extensively as may be necessary: but let each bean have sufficient space in which its roots can extend. Very often the seed is sown so close together that the plants are very much cramped and they have no chance to grow as well as they should. Some succeed infinitely better than others: therefore it is always advisable to experiment with several varieties of dwarf growing kinds and runners. As an all round variety Canadian Wonder stands out well. Of the butter beans, Anderson's Wonder is worth a trial, and of green runners the best I have ever produced is Carters's Jubilee, very large and tender and it is also a well flavored bean: but whether it will succeed in other localities I do not know at present.

Broccoli—A little seed may be sown during the month, and when the seedlings are able to shift, prick them out about 6 inches or so apart, and they may be planted out when matured. Use the manure liberally for broccoli and then endeavor to grow it without a check.

Borecole or Kale is worth a trial and is best suited for the cool districts. Like all members of the family, it needs rich soil, and a mistake cannot be made in the use of abundance of manure—that is, farmyard manure. Make a start by sowing a little seed.

Cabbage—Sow seed occasionallly during the month, but only sufficient to keep up a supply of plants.

Cauliflowers—Work this as advised for broccoli, for it is much the same kind, and obtain the best seed procurable.

Cucumber—Seed may now be sown if necessary.

Celery—Sow a little seed and plant out any well grown pricked out seedlings. Use manure liberally, and if the weather is dry water will probably be necessary, for celely needs a lot of moisture. Earth up well grown plants in order to blanch or whiten their thin leaf stalks.

Cress and Mustard—Sow a little seed now and then during the month. If the weather should be dry a lot of water may be necessary. A very small bed should suffice for each sowing.

Egg Plant—A sufficient number of the plants should now be growing to meet all requirements: but if not, seed may be sown, and the sturdy seedlings should be planted about 2 feet or more apart.

Maize (Sweet) — Cultivate the plants frequently—not deep, but quite shallow—and keep down weeds. A sowing may be made if more is required.

Onions should be grown where possible, and it is but few places that onions cannot be raised. A few seeds may be sown if more onions are required, and make the surface soil as fine as possible before the seed is sown. and then sow the seed quite shallow in rows. The best way if large quantities are not required is to sow in small well made beds, and when the small onion plants are fit they may be transplanted to the main bed. Water well before and after planting. Use abundance of manure and work it well with the soil.

Parsley—This herb should always be grown, if only a plant or two. One well matured plant will produce a considerable quantity of leaves if they be judiciously picked.

Peas—If the ground be moist and the season favorable seed may be sown, but in a dry locality it is not worth while risking a sowing.

Potatoes—Work out a few rows of good variety: some persons prefer the waxy kinds, others the flowery or mealy sorts. Kidney varieties have a tendency to be waxy and it has been said that they are the most wholesome. Select clean seed and have nothing to do with any showing scab. Drop the potatoes about a foot apart, and plant in rows about 2 ft 6 in apart. If the soil is well drained, as it should be, plant about six or seven inches deep: if badly drained plant out quite shallow.

Pumpkins should be advancing well by this time, and probably there will be sufficient for all requirements.

Spinach—Sow a little seed occasionally.

Tomato—Seed may be sown if more plants are required: if any old plants which have spread over the soil are half rotten, or their leaves are decaying and the condition is in a mess, remove the lot for the fruit is not likely to be of much good, and if allowed to remain the plants will probably become diseased with the fungus pests. It is an easy matter to train tomato plants, and when trained the fruit is likely to be of superior quality, and diseases are not likely to be so prevalent as when the tomatoes are growing wild.

If the fruit is to be dried in the sun, use wooden trays 2 feet x 3 feet, which are made for the purpose, with 2½ inch cleat at both ends These are easily handled, and can be sed in connection with all fruits

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The Orchard.

THE RE-MAKING OF AN ORCHARD.

BY A. G. CAMPBELL.

APART from all the efforts that are being made to plant and rear new orchards in several parts of the State, it is interesting and instructive to find that science has been able to reclaim and rejuvenate an orchard which was stated on all sides to have seen its best days. In order that the public may know what can be done with discarded fruit trees, the following experiences of an orchardist may prove interesting. To start with, his orchard was in a bad state—full of tangled and impoverished growth, harboring untold quantities of the codlin moth, mussel scale, and woolly aphis. In fact, its destruction was contemplated.

The orchardist, Mr Smith, of Portland, writes—My orchard, everybody can tell you, was very dirty four years ago—now it is clean, and this season I harvested 1600 cases of fruit from over two acres of trees I thought that some of the methods explained by Mr Luffmann, when the Sta demonstration block at Portland was planted in 1902 would suit my case and I adopted them. The first year I thinned out with the saw a number of tons of branches, so that light and air could more freely play in and about the old and diseased trees. The trees were thinned only, especially about the tops, and none of the leaders or growing points were cut back. By this method the first step was taken towards insuring the growth of fresh fruiting wood throughout the whole

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length of the branches. Further, the thinning of the old trees allowed access to the spray pump, which was no less an important instrument of succour than the pruning saw. The trees were at once sprayed with strong salt and sulphur mixture, made on the following plan—

> In a kerosene tin slake 5lbs of lump quicklime, add 5 lbs sulphur, and boil for one hour, keeping well stirred, then in another tin slake 5lbs quicklime, and add 3 lbs salt, mix the two tins, and keep hot. For use, take one part of this and add four parts of hot water, strain well and apply ho

This is a splendid insecticide, not only killing all diseases like the woolly aphis, scale and red spider, that harbor on the bark, but cleaning off all moss and lichen growth as well. The new spur and shoot growth that comes in spring has then every possible opportunity of maturing well. Then in November, for the codlin the young fruit was sprayed with a patent mixture which is practically arsenite of soda, made in the following way;—

> In an enamel pan boil 1 oz. white arsenic and 2 ozs. washing soda crystals in a quart of water for about fifteen minutes, stirring well. Pour this on 2lbs lump quicklime, and add more water if necessary, to well slake it. After standing half an hour this, when strained, will make 20 gallons of spray.

This spray was given four times, at intervals of nine days. But all through the summer any fruit missed by the spray that was seen to have a grub in, was picked off for the pigs, which also got any infected ones that had fallen to the ground As the result of this simple but effective treatment, the old fruiting spurs on the trees became fruitful again, and new spurs showed themselves in the lower parts of the branches.

The winter pruning from this onward consisted of still further thining the tops of the branches and cutting away any very old spurs that were obviously worn out. The salt and sulphur mixture was again applied, and from then till now the apple scale, which before was a scourge, is very difficult to find. In the following spring the trees were sprayed with 6lbs. blue stone. 4lbs quicklime, 50 gallons of water for blackspot, and the trunks bandaged for codlin moth, but the latter pest, it was soon found, is best coped with by spraying, as above indicated, in November, and destroying any grubby fruits wherever found.

THE RESULTS.

Last season the crop taken from the trees, which are mostly apples and pears, but also include apricots and and plums, was 1600 cases of good fruit, the total number of trees in bearing 390. This is a splendid and needless to say, a profitable return for the labour expended in cleaning and rejuvenatidg the orchard, and a fine testimony to the value of simple but effective methods of ptuning and spraying, which can only be judged by such results. One pear tree bore 23 cases of fruit, 2 apples, and 17 and 10 cases each, and several others up to 5 cases.

Some of the success of this orchard it must be admitted, is due to the natural conditions obtaining. Artesian water can be tapped at 33ft in depth, and with two small pipes, let down at the highest part of the garden, an unlimited supply of excellent limy water is obtained. Mr. Smith says he watered three times last summer, two days each time, allowing the water to run into channels with closed ends.

Music Sellers.

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This Month's Gardening.

Plains.

Kitchen Garden—Plant Cabbage, Cauliflower, Celery, etc. Sow vegetables for early crops, such as Lettuce. Radish, Turnips, Spinach, Carrots, Parsnips, Mustard and Cress, Onions. Leek, and Peas, a few Broad Beans, Plant early Potatoes, Tree Onions, Shallots, and Garlic. Sow some of the hardier herbs (Thyme, Sage, Marjoram, etc.) Cut down stalks of Asparagus. Prepare ground for next month. Attend to watering newly-planted vegetables and seed-beds.

Flower Garden—Sow hardy annuals and Perennial herbaceous plants. Put in cutting of Pelargoniums. Plant early-flowering bulbs, such as Crocus, Hyacinth Tulip, etc. Commence towards the end of the month layering hard-wooded plants and, should the weather be cool and damp transplanting evergreen shrubs and trees, lifting each with a good ball of earth, and watering them thoroughly in their new positions. Seperate plants layerd last season from the parent plants prior to being removed. Cut back Pelargoniums. Sow Chinese Primulas, Calceolaria, Cineraria, Pansies, etc., in pots.

Fruit Garden—Finish the fruit-havest. Water Orangetrees. Remove suckers from trees. Attend to vintage. Remove remaining ties from budded trees.

Hills.

Kitchen Garden—Sow vegetables as on the plains, selecting drier positions on the slopes of hills, as the so called swamps will soon get too cold and wet for cultivation. Plant out Cabbages, Cauliflower, Broccoli, early Potatoes. etc., watering the young plants of the former if the weather should be dry. Hoe and earth up Cabbages, Celery, etc. Cut out runners of Strawberries, leaving the strongest

Flower Garden—Sow annuals, as recomended for Plains, and carry on other operations mentioned there. By cutting back Verbenas again in autum show flower may be obtained. Commence dividing and transplanting perennials and evergreen shrubs and trees.

IRIS SUSIANA.
FINE HEALTHY PLANTS OF THIS
HANDSOME HARDY IRIS, 1s. each.
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Telephone 350

The Fuchsia

Fuschia is a genus of perennial dwarf shrubs and climbing and trailing plants, with few exceptions, originally natives of Central and South America. The first species introduced into England was Coccinea from Chili in 1788, after which none were received until 1823, when gracilis was introduced.

Several other species followed during the next few years, and the plants being easily cross fertilised and seedlings easily raised, the present type of garden fuschia was created. A number of the original species is still considered worthy of attention: except in the case of individual flowers, many are quite equal to the florists varieties in value as decorative plants for conservatory or open border.

Fuchsias are easily grown when the conditions are suitable and are again becoming popular plants. A few years ago finely grown specimens were seen at horticultural exhibitions, the plants being of large size and symmetrical in shape and covered with flowers. For pot culture, for geenhouse or verandah decoration, the fuchsia is excellent, the plants producing their beautiful pendulous blossoms for a long time under fairly moist conditions. Many varieties are suitable for basket culture or trailing plants, the foliage of a few being also variegated or golden cultured.

Culture.

A rich sweet loam is the most suitable soil for fuchsias, either when grown in pots or open border. For pot culture the soil should be fairly porous, the addition of sand leaf mould and well decayed cow manure effecting the purpose. The soil for potting should not be pulverised, a rather coarse soil being preferable. The soil should be firmly pressed around the plants when repotting, as a loose soil produces gross rank growth. Plants grown in pots should not be allowed to become pot bound, but should be placed in larger pots before the roots become entangled around the sides of the pots. Vigorous plants growing freely may be repotted into pots two sizes larger than those they occupy, weaker growing ones into pots one size larger. Plants when they are not grown under greenhouse or conservatory conditions should not be repotted during winter. For the open border shade and shelter from hot winds are of first importance. A southerly or easterly aspect is most suitable. If the soil staple is of a sandy hot nature, clay and cow manure should be liberally added, and the plants should be mulched and watered freely during the very hot dry weather.

Pruning consists chiefly in pinching during the growing season to keep the plants in shape: a pyramiddal form is most suitable for the majority of varieties, enabling the whole of the blooms to have full and ample time for development. During winter fuchsias in open borders lose most of their foliage. These plants may be pruned back in spring when growth is commencing.

Existing varieties are propagated from cuttings inserted in spring in pots or boxes containing well drained sandy soil. Nurserymen increase their stock by placing the old plants in heat, and as they develop they strike them in a fram or hothouse. Cuttings of the ripened growth are easily rooted in open ground, but the young growth is always preferable. New varieties may be raised from seed, which is often freely produced on plants in the open garden. No improvement in variety is likely unless well marked and fine varieties are used as seed parents and hand fertilised. The process is very simple. The male organs, the stamens should be removed from the variety selected to bear seed, and pollen from the variety selected for crossing should be applied to the stigma with a camel hair brush. The seedlings are easily raised and may be grown in pots for a while and afterwards planted out in a shady border.

Varieties.

A few of the original species are procurable in local nurseries, including corym biflora, gracilis, splendens, triphylla anc procumbens. The latter is of trailin habits of growth.

Varieties with double corolla—
  Avalanche, Countess of Hopetoun
  Jubilee, Mrs E. G. Hill
  Phenomenal, Edmond About
  Creusa, Molesworth
  Mr Gladstone, Christolphe Colomb
  Madame Jules Chretien
Single corolla—
  Mrs Marshall, Mrs G. Rundle
  Leda, General Roberts
  Harlequin, Irma
  Mrs G. Ditton
  Countess of Aberdeen
  First of the Day, Sunray
  Wave of Life
  Earl of Beaconsfield

Note cnange of address—Australia Gardener, corner of Pirie and Wyatt sts

Poultry Yard.

Export Trade in Poultry.

(By Jorgen Anderson.)

When starting in any of our rural industries with the object of making a living, it should be taken into consideration whether the produce you are going to raise is wanted in any quantity in the local market; and, in case a glut should occur, whether the article can be exported with profit. As far as the poultry industry is concerned, there is a never-failing good demand at profitable prices for table birds, both in Adelaide, and London. In Melbourne the best results are obtainable during the last six months of the year, while London pays the highest prices during the beginning of the year. The demand for prime table birds in London has never been overtaken. From Heathfield and Uckfield, in England, the quantity of table birds despatched for London ten years ago amounted to 1850 tons per annum. The output has now increased at a greater pace. Large quantities of frozen poultry are imported from foreign countries, especially from Russia and U S.A., but nothing that can be classified as first grade. Lately Canada has sent good birds, realising up to 10½d per lb. The latest market reports from London market states:—"The choice fatted Canadians are of a superior type, and are making from 9d to 10½d per lb; but there are many inferior sorts going cheap enough. But for these the market would present a dreadfully desolate and bare appearance. The price of frozen chickens range from 2s to 9s a pair; goslings, 13s to 17s; duck 8s to 14s; Surrey and Sussex chickens. 7s to 12s: Essex, 5s to 8s; Bostons, 5s to 8s.

It is of especial interest to note that the prejudice in British markets against frozen meat is decidedly getting nearer the vanishing point. On several occasions frozen poultry has been preferred to English birds, because freshly killed birds quickly deteriorated during the warm weather, whereas the frozen article is always fresh.

The value of poultry and eggs imported into Great Britain mounts up to about £8,000,000 per annum, and even if our export trade were immediately increased by fifty times of what it now is, we would still find a profitable market for prime birds.

FINISHING OFF.

This has been and will probably remain a difficulty. It must be understood that no fowl is accepted in London as a 'first-class' one without having been 'crammed.' It is not only on account of the additional flesh (not fat) the bird puts on but its flesh assumes by this process a delicacy which can be imparted to it in no other way. In England there is a distinct 'division of labor' in the trade. The fatteners buy the chickens from the growers and prepare them in accordance with requirements There are fattening establishments in England which turn out over 5000 chickens a week In France all the good market birds are crammed—not always with machine. which is the easiest and quickest way, but often with pellets. There is no difficulty involved in this treatment, and a progressive farmer should as readily and easily turn to his cramming machine as he does to his seperator. In fact, the latter is far more difficult to handle than the former.

But if cramming cannot be done, the birds must be fed on fattening food, such as Barley—and rice—meal mixed with milk. They should be in good condition before being 'topped off,' and should be starved for at least 24 hours before the process commences; and as soon as they begin to show a falling off in appetite, they must be marketed or forwarded for export. This will fall off in their desire for food in about a week or ten days During that period they must be kept in a small enclosure or in coops. It increases their appetite to give them a little green-stuff in the middle of the day for the first few days. They should be fed morning and evening, and the mash not eaten up quickly and at once must be removed out of their sight.

PREPARING FOR THE ENGLISH MARKET.

This is the easiest part of the whole business. All that is needed is to forward the birds to the Government depot. The facilities afforded by this State for the export of poultry are the best and most complete to be found in any country. The birds are killed, plucked, dressed, graded, packed in crates and put In the freezing chamber till shipped, all for 7d. a pair. The birds intended for export should not be less than four months and not more than six months old.

I have assumed that intending exporters have some experience in handling poultry. Beginners will do well to recognise that experience and some capital are indispensable in order to make a living in this business. But to start with poultry, while not depending on it, will be found both profitable and pleasant. The complaints which are occasionally made about the marketing of poultry in Melbourne arise chiefly from the fact that the birds sent are of an inferior quality—too old, too young, or in poor condition. As a rule 80 per cent. at least are not suitable at all for table purposes

Of one thing there can be no doubt, turkeys do best in the fresh air, and will not stand coddling; they should be housed in large airy sheds, open completely on the eastern side, with perches fairly wide (three to four inches). The straighter the breast bone, the better satisfied wil the consuming public be, and narrow perches mean crooked breast bones. Do not place the perches too high, especially where the ground is hard or stony, as turkeys are, like fowls, subject to bumble feet, which often spoil hens for a whole season. I am quite convinced that turkeys must be encouraged to accustom themselves to shed roosts.

Keep the young turkeys dry. Nothing kills sooner than long wet grass: once they get a soaking, death may be expected Always keep them in confined pens, well sheltered from wind and rain. Do not on any account allow them on the dewy grass, but keep them in until the sun has dried the grass off a little. Examine all young poulits for vermin, which is so troublesome at the back of the head and near the vent; hundreds of bird die through no other cause. The pest is similar in habits to the tick. holding on and penetrating the skull. The young birds should be freely dusted with insectibane, and a little carbolic paste applied at the back of the head. Neglect in this matter is the cause of many deaths. The fact that late hatches do not develop as fast as the early hatches is of importance to all farmers of poultry, be it turkeys, ducks or fowls. The early chicks may be relied on to produce the best results. The longer a hen lays in a season, the more impoverished she becomes as a result of hard work.

A turkey hen, after she has had companionship of her mate for say a month lays seventeen eggs at a stretch, the whole batch laid prior to her brooding will be fertilized. In short, you need only borrow a good gobbler for one month in the season, provided you are not hatching late chicks. See that his toes are not like a raizor, otherwise serious results may follow; I have, this season, stitched three beautiful bronze hens, the backs of which had been laid bare.

Poultry and Duck Breeding.

(By R. A. Cummings)

In April, 1903, having purchased a small property containing about five acres of land, and, thinking to make it bring in some return, I decided to take up poultry keeping, partly as a hobby, and partly as a profitable means of income. I had in hand eight Black Minorcas, inferior birds and three years old, so of course had not any eggs from them from April 1903 to August same year, but, securing a few broodies cheaply and a couple of dozen common duck eggs early in the spring, I succeeded in hatching 22 and rearing 18 ducklings. I also purchased a quartette of Brown Leghorns, but only rared four chicks from these, pussy had the rest. The ducklings were sold at Christmas for 36s. The Leghorns for 20s. about March 1904, when I purchased three Golden Wyandotte pullets and a cockerel for £2 13s. The Minorcas were sold and Buff Orpingtons purchased with the money.

I then spent about £4 on building houses, pens, and yards, etc , and penned birds up, Golden Wyandottes returning by far the largest profit, as they laid most consistently all through the winter and spring. Buff Orpingtons just about paid expenses for year,

The soil being very suitable for duck raising, I decided to purchase an Incubator and Brooder, and some Pekin and Indian Runner ducks. The Pekins I got locally, paying 4s per pair for six pair, and getting a drake from Victoria, started in good earnest at duck-raising.

In spite of many difficulties and failures I succeeded in the spring of 1904, rearing about 70 Indian Runners and about 100 Pekin ducklings, deriving very much fun and pleasure in attending to the supply of their ravenous appetites, and peculiar ways. I had always been told to keep little ducklings from paddling so made a great deal of trouble and work for myself by trying (in vain), to keep them out of the water, my only success being that after rearing quite a number to the age of one month, and thinking them then past all danger, the first time they would get any quantity of water, they would run round as if drunk, topple over and die. I lost, in all, about 100 in this way, sometimes ten or twelve in one morning. My! it was heart-breaking, but being a kind of "Nil Desperandum," I wrote to the HEN and there received valuable instruction on the care and feeding question, which put me in a very much better position. But not until feeling everything was a failure, and saying over the last clutch: "Well live or die, you can please yourselves where you go, and what you do," and putting a large shallow baking tin for them to wade in, did I find out that, as far as my experience was concerned, ducks cannot be successfully raised out of water, and henceforth the ducklings from a few days old are allowed their dish to go in and out as they please, the consequence being I have not lost more than 3 per cent after hatching.

The Golden Wyandotte chicks I have always found healthy, quick growing, and good foragers, often out on their own very early in the morning before the mother was liberated. The balance sheet to end of June, 1905, showed total cash balance over expenditure of £35, which was more than enough to cover buildings, incubator, etc. Thus, in two years, everything was clear and a fresh start could be made.

Food has been very expensive. I have never bought wheat under 3s 6d, very often paying 4s 6d per bushel for it. The food I vary considerably, giving wheat, oats, maize, barley and peas, in grains, and potatoes (which I bought one year at 15s a ton), with pollard and bran, and refuse green vegetables. I also grow swedes and beets, and found these mixed in the mash a very good food for ducks. Always had plenty of grass and clover, so did not need other green food. Purchased bullock's liver once a week for growing stock and laying hens.

I have been fairly successful in the show pen, winning 3 Specials, 14 Firsts, 7 Seconds, 5 Thirds in 31 entries 1904-5, other years accordingly. I append balance-sheet for 1906, and Consistent Laying Record of pen of Golden Wyandottes, which I consider the best layers of all breeds because of their Autumn work. My poultry has always paid me well, and under other circumstances would have paid much better.

I have this year imported from England a trio of Buff Orpingtons, which are magnificent birds and well repay the money spent on them for the pleasure of seeing them in the yard, and the admiration they receive from all visitors,

The young stock is coming on well, and I trust this year will not see any decrease in the profits of a Poultry Fancier.

BALANCE SHEET.

June 30, 1906.

	£	s	d
Stock Sold	£35	10	3
Eggs for Setting ...	11	2	6
Eggs Marketed	15	9	8
Preserved Eggs Marketed	3	0	0
Eggs and birds own use ...	6	12	5
Prize Monies	3	18	0
Value of eggs Incubated	2	1	0
Stock in hand	20	17	6
Food on hand	0	18	0
Total...	£99	9	4

June, 1905.

	£	s	d
Stock in hand ...	£23	11	3
' Purchased	5	0	0
Food in hand	0	13	2
Food Account to 1906 ...	31	10	8
Advertising, Stamps, etc.	5	10	0
Show Expenses ...	3	12	6
Cash Balance ...	29	11	9
Total...	£99	9	4

Since making this Balance Sheet I was compelled to hold auction sale, and birds sold realised within about £3 of stock in hand price, so if sold privately do not think they were over estimated.

Consistent Laying—5 Gold Wyandottes in twelve months laid 1085 eggs, being an average of 217 eggs per hen. During the time four or five set and brought up a clutch of chicks each, laying again under three weeks from the time the chicks were hatched.

During six months ending December, 1905, these birds produced 574 eggs, for following six month to end of June, 1906, 511, so you will observe their egg-production during the month eggs were high in price was quite equal to the spring season, in fact, the moult seemed not to make any difference to their egg yield.

It is quite possible and probable for heavily-moulting birds to get sunburnt. Don't forget to provide abundant shade for them.

WHAT KIND OF BIRDS TO SEND TO ENGLAND.

The late Mr Lewis Wright, England's greatest authority on poultry, says in his book, after reviewing the table birds of France and examining their suitability for the English market; —'We believe that the fowl to be aimed at for general purposes will be of the accepted English type reared for so many generations in Surrey and Sussex.' This opinion is general in England, but the most conclusive evidence of the superior quality of the Surrey (or Sussex) fowl is found in the market reports The Surreys have for years—long before the Orpingtons and the modern fowl were produced—completely dominated the London markets. If the Surrey is not to be obtained, take the next best—the Buff Orpington. This variety was produced by Mr William Cook by crossing with the Surreys, which are also Buff colored, and the advantage gained was not on the side of market values. The difference in the Surrey fowl and the Buff Orpington is mainly this: the former has smaller bones, straighter and more developed breast and a plumper appearance than the Buff. The protruding breastbone of the latter is a disadvantage. The London requirements for a first class table bird are; a small breast bone, plumpness, and a well developed breast, small bones, white and featherless legs. The nearer we get to the accepted standard the more satisfactory will be the returns.

The Dairy.

Those who have cows and dairies so close to towns that they can deliver the milk to the customers do not always cool their milk. It is sometimes delivered almost warm, and the time between milking and delivery is so short that it is thought cooling is unnecessary. By not cooling a little labour is saved, but, on the other hand, cooled milk is always the most reliable, and gives the greatest satisfaction In hot weather, even if the milk is delivered an hour after milking, part of it may go wrong before the day is over. Those who possess it rarely blame themselves or their treatment for the failure All ills are put down to the dairy, and more peace and patronage is secured by milk that is cooled, which can be relied on to remain quite fresh and sweet for twenty-four hours, in spite of weather or natural conditions. It may, however, be well to point out that cooling milk is no antidote to uncleanness. Filth and dirt will quickly taint and spoil the most genuine milk ever produced. Cooling is not a remedy for carelessness with the churns and dishes. Milk that is sent by rail should invariably be cooled. There is not a vestige of adulteration in cooling. It is the most perfect preservative that the milk can be submitted to, and the only one that should be tolerated. It in no way increases the price of the milk to the producer, but cooled milk remains so much longer perfect than that which is uncooled that the process gives the buyer satisfaction and confidence in the milk, which is a great matter with such a perishable and much-suspected article. If used when in a state of decay, which is really its condition when soured and tainted, it is highly injurious, indeed often extremely so, and the dairyman who cools his milk not only safeguards himself against worry and loss, but he confers a benefit on the consumer to an extent that is most creditable.

A New South Australian Industry.

Australian waters abound with all kinds of fine fish. The Robe Canning Company have started a new industry, in the shape of putting up the True Australian Lobster A sample tin which was left at this office was opened and tested, and in the words of one of our largest wholesale houses, it was simply delicious. We may say the Cape and imported article is not in the running: we have great pleasure in letting our readers know of this luxury which can be obtained at all first class grocers and storekeepers.

GEBHARDT, H., late J. Gebhardt, Locksmith, Gunsmith and Machinest. Every description of Brands and Stamps made. Repairs to Saddlers Iron mongery a speciality. Keys fitted to any Lock or any given sample. Grenfell St., rear of No. 7[illegible], right op. Bible House

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Asters, Zinnia, Portulaca, Sunflowers, Cosmos, Phlox, Gomphrena, etc.

From 3d per pkt.; plants, 4d per doz.

VEGETABLE SEEDS—

Trombone Cucumber, Vegetable Marrow, Pumpkin, Capsicum, Cape Gooseberry, Water Melon, Sweet Melon, etc.

From 3d per pkt.: plants 6d per pot.

AGRICULTURAL SEEDS—

Sorghum, Amber Cane, Planter's Friend, Lucerne (varieties).

Write for samples and prices. All seeds post free, peas and beans excepted.

All Poultry Requisites. Chick Meal, 1s 3d per doz. Green Bone, 6d per pkt. Roup Pills, Excelsior Spice, etc.

Plants of all descriptions. Wreaths, Crosses, Presentation Bouqets. Bridal Suites a speciallty.

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Good Work at Moderate Charges.
Watches Cleaned from 2s 6d
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Potting Plants.

New pots should be thoroughly soaked and dried before being used, and old ones must be well washed. Before putting in the soil, provide drainage by putting a piece of broken pot over the hole in the bottom. Then put in a number of smaller pieces. To ensure good drainage, place some fibrous turf over the potsherds. This will keep the finer particles of soil from working downwards and stopping the free course of the water. The pot soil should be rich light compost, nicely damp If wetted too much, some composts will knead together like dough, and will crack and shrivel. If too dry the delicate root hairs are injured. Do not pot soft-wooded plants too firmly, but hard-wooded ones with wiry roots require firm potting. The old plan of standing pots in saucers is a mistaken one, except in the case of semi-aquatic plants. The roots require free access of air to the hole at the bottom

◆

How to Dissolve Bones.

Cover the bottom of a tub or hogshead with 6 inches of dry soil. On this place the same depth of bones, and cover entirely with wood ashes. Repeat these layers till the vessel is filled. After exposure to the weather during the summer and winter, the whole mass can be readily reduced to powder, and thus form a valuable manure for digging into the ground in spring

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New Potting Material

Every kind of Plant THRIVES in it WITHOUT EARTH.

(Extract from the Company's Circular)

Roots of Arum Lily and Roman Hyacinth Grown in Jado Fibre,

Advantages of Growing Plants Seeds in Jadoo.

Seed germinate more quickly in Jadoo than in earth

Greater perfection easily attained

Suits all kinds of plants

Is much lighter than earth

Less frequent watering is required

The flowers are larger, of richer color, and last longer

No soil to mix; No manures required

Admirably adapted for raising seedlings striking cuttings, and general conservatory and frame work

Increases the size of the flowers

Gives substance and enduring qualities

Ensures brilliancy and intensity of color

Specially suitable for hanging baskets because of its lightness and freedom from drip

Bedding-out plants grown in Jadoo wil resist long-cotinued drought

Clean to handle, and therefore specially suitable for window boxes, and for growing flowers in the home

DIRECTIONS FOR USE.

For Plants in Pots—Use it exactly as you would use earth. The only thing to be taken care of is that the Jadoo is pressed tight round the plant. Water the plant well directly after potting. Don't overwater afterwards. In sowing seeds and planting cuttings in Jadoo an even surface must be obtained by sifting the Jadoo, or by putting a little fine soil or sand on the top of it.

For Tomatos in Pots—Sow in Jadoo, and use Jadoo for two first shifts; afterwards, half Jadoo half earth.

For Strawberries in Pots—Strike the runners in small pots full of Jadoo: use half Jadoo and half earth afterwards.

Concentrated Jadoo Liquid

Both Meat and Drink for Plants.

Revives drooping plants, strengthens the weak, and nourishes the strong. Above all, it increases the size, causes greater profusion of bloom, and heightens the colors of all flowers. Simply invaluable in pot culture. One gallon makes 48 gallons of strength for using. The cheapest fertilizer that can be bought.

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The Fruit Fly.

The Mediterranean fruit fly, the discovery of which has caused such consternation among orchardists, bears the long scientific name of "Ceratais capitata," is one of the most pernicious pests with which the fruit grower has to contend.

In order to reduce the loss caused by this insect, all fruit growers are strongly advised to carry out the following simple precautionary measures:—

First...To grow only such varieties of fruit trees as are worth growing, and to look after such trees thoroughly.

Second...To grub out and burn all useless fruit trees that never give any return, and that only act as a nursery and distributing centre for the pest.

Third...To gather and destroy all infested fruit.

The efficacy of these measures depends on the active co-operation of every fruitgrower, not only those who grow fruit for a living, but those who have one or more fruit trees growing in their garden, yard, paddock, or round their fences, as the neglect to destroy the pest whenever and wherever it is present will undo in a great measure the good that will result if the recommendations are carried out systematically.

There is only one stage in the life history of this insect in which it is possible to destroy it in large quantities, and that is when the larva or maggot is in the fruit. In this stage it is in a trap, as if the infected fruit is gathered and destroyed every lava contained therein is killed and subsequent crops of mature insects are prevented.

There is no known effectual means of preventing the fly from attacking the fruit other than covering the trees with a netting that is impervious to the fly, and this, in the case of anything except dwarf trees, is out of the question; so that our sole chance of keeping it in check is to reduce its breeding grounds, and to destroy the larva in the fruit,

Mr. French the Government Entomologist of Victoria, recently visited Queensland, and in an interview declared that what he saw revealed a state of affairs infinitely worse than anticipated. Several small orchards inspected were simply rotten with the pest, and if these were in Victoria most drastic quarantine measures would be immediately enforced. The pest was not the Queensland fly, as supposed, but the Mediterranean fly. He saw it in Syndey, but not nearly so bad. So far it has only been found in Victoria at Melbourne and Bendigo, but it is known to exist in one orchard at least across the border from Albury. Mr. French, with Mr. Adams, closely inspected the fruit in local shop windows, and found it badly infested, peaches especially. From one fruiterer they obtained a cucumber which contained 57 of the larvae of the Mediterranean fly. Apples were found to have 23 punctures; watermelons were also attacked. Mr. French said that he had discovered for the first time that the fly would attack green fruit. He states that the Fruit Pest Act should be strictly enforced at once, as the prevalence of the pest jepardizes the industry and imperils the health of the commuuity.

Undertakers.

HADDY, J. C., & SON, Funeral Directors and Carriage Proprietors. All Funerals conducted under personal supervision. 113 Flinders St., Adelaide Phones—Adelaide 1677, Port 110, and Semaphore 255. and Jetty Road, Glenelg. Phone 78

A Big Business.

The fruit growers of South Australia are very fortunate in having such enterprising people as Messrs. Geo. McEwin & Son of Glen Ewin. Our reporter interviewed Mr, Robert McEwin, and in the course of conversation, he stated that their factories turned out immense quantities of tinned fruits and jams. During this season they have used 400 tons of Apricots and 600 tons of Plums, beside a proportionate quantity of every other kind of fruit, and the season has only just commenced.

"Fadeless" Flowers.

Mr. Luther Burbank, of San Francisco has developed a "fadeless" flower. He calls it the "Australian star flower." He evolved it from a half-hardy annual found in west Central Australia. Mr. Burbank describes the flower as a "unique and beautiful plant, which grows readily from seed in any ordinary garden soil, preferring sandy loam. It blooms early in the season, and continues to bloom for a long time." The fragrant flowers are of a rosy crimson shade, sometimes approaching pure white. They are produced in large, graceful clusters, which, when cut, will retain their form and colour permanently. The full-grown plants are about a foot high. Though the stem of the flower may dry up, the blossoms do not fade. Mr. Burbank has a cluster of these blossoms in his library which have remained there unchanged for a whole year Neither do they lose their odour.

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Autumn Show.

March 7, 8, 9, 1907.

Entries for Horses in Action close on Monday, March 4th at 4 p.m.

Tickets, 10/6, admit Member and two Ladies to Grounds, Members' Stand and Two Concerts.

JOHN CRESWELL, Secretary.
29 Waymouth Street, Adelaide.

April Number of 1907

The Australian Gardener.

Rose Cultivation.

Open ground Roses should be obtained from the middle of April to the middle of September. Roses out of pots may be planted at any time.

For garden decoration Roses are indispensible, alike for the mixed border or as single specimens, For exhibition purposes or where large collections are grown beds or borders should be specially prepared apart from other flowers, as only in this way can they grow to perfection. It is unimportant which aspect the plant faces: for, giving an open and airy situation, not overhung with trees, with a moderately retentive soil, Roses will thrive better than most plants. For the preservation of the blooms a wind break is necessary. Climbing Roses grown on trellis form a good protection. In close and sandy situations, mildew and other pests will be troublesome.

The soil should if possible be trenched a month or two previously, working in a good quantity of cow manure, with a sprinkling of bone dust. Keep the bottom soil in its place, but break it up well to a depth of eighteen inches, In flower beds or borders where this is not practicable, holes should be taken out wider and deeper than is necessary to hold the roots, and the soil enriched, or replaced with new.

On arrival of plants unpack carefully in the shade, and sprinkle well with water. If the soil is too wet or it is inconvenient to plant at once, make a trench and lay them in. Dwarfs may be completely covered with soil: half-standards should have their roots covered with soil, and the tops with a wet bag. Before exposing the roots get the holes ready. The distance apart may be anything over eighteen ins. for dwarfs, and for half-standards 2 feet 6 inches or over, according to the size the plants are allowed to attain. The depth of plants in the ground when planted should be two or three inches deeper than when grown in the nursery. Dwarf worked Roses, viz., those worked on the main stem near the root should have the point of union covered three inches, as by so doing roots are often emitted from the Rose itself, and the plant is steadied against strong wind. When planting, if the weather is at all dry have a bucket of water handy; dip the roots of each one in it before planting. Spread the roots evenly, giving them a downward tendency Fill in part of the soil and tread firmly, then the remainder, leaving a shallow basin round each plant about two feet across. Place a stake to each one and give a good mulching of stable manure. Water well after planting. Shorten back the top at once, as by transplanting the natural balance between roots and branches is upset. By reducing the top the heavy drain on the vitality of the plant is lessened. Do not mix stable manure in the hole when planting, but use it as a mulch on top.

For garden decoration and the production of cut flowers, for which purpose teas and hybird teas are more especially adapted, it is unnecessary to prune severely. Merely thinning out weak and exhausted wood, and keeping the head evenly balanced is all that is required, providing they have plenty of room to grow. For large blooms it is necessary to prune fairly hard, removing all exhausted wood, and shortening back previous season's growth according to habit and vigor of plants. One system of pruning for all varieties of Roses should not be adhered to, but each pruned according to its mode of flowering and habit of growth. Sorts like Marechal Niel and others that bear flowers on lateral shoots made from strong running growths should be left long. Moderate-growing varities and those flowering from the end of strong shoots of current season's growth, may be pruned more severely. Banksia Roses and varieties that flower direct from wood made during the previous summer should be pruned immediately after flowering, if necessary to restrict their growth, Hybrid Perpetuals should have all wood over two years old removed, and growth made the previous season pruned fairly hard.

Roses will grow and blume profusely with no other manure than a good mulching two or three times a year. But to grow blooms to perfection liberal application of manure is necessary when coming into flower. This is better given in liquid, as the plants assimilate it more readily. Nothing equals cow manure for for this purpose, applied weak and often.

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Active Agents Wanted. LOUIS E. WILSON, Manager.

Keep the surface soil between the plants well stirred after watering. On all worked Roses suckers are occasionally thrown from the root of the stock. They are easily distinguished, and should be pulled off or cut out as near the stem as possible. Mildew is sometimes troublesome in autumn and winter. The most effective remedy is equal parts of fresh-slacked lime and sulphur, dusted on the foliage when moist in the morning.

We would advise those of our readers who are contemplating the planting of Roses to inspect Mr. Kemp's Garden at Unley Road, Unley. He makes Roses a special study, and stocks almost every variety. See his advertisement.

Testing Seeds.

The nurseryman and seedman are frequently blamed for selling bad seed, when the fault more often lies at the door of the purchaser. We have never had case to complain of bad seed from our local seedsmen. On the contrary, on one occasion last year we wanted some parsnip seed, and three nurserymen refused to sell it as it was old seed, the new crop not having arrived. They were scarcely even willing to give it away, preferring to destroy it to getting a bad name. When buying seeds, it is a very simple matter to test them, in two or three ways. Rapidly germinating seeds, such as mustard, cress, radish, etc., may be laid on wet flannel in a warm shady place. The good seed will soon show themselves. Another way is to fill a pot with wet sand. Scatter the seeds on the surface, and cover the pot with a piece of glass. Say you count out one hundred seeds for planting, there should, if the seed be fresh, from ninety to ninety-five which germinate. Remove each seed which has struck, keep a tally of them. If more than five per cent, fail to grow, the seed is not too good. and in order to secure a good stsnd, more will be purchased than if it were fresh. These easy tests will show the gardener whether his cultivation, the birds, or the seller of the seeds is to blame.

How to Grow Large Melons.

A very simple method of watering and at the same time manuring melon vines is to sink a cement or bottle-ale cask a little over half its own depth in the ground Then throw up the soil against the uncovered part of the cask thus making it the centre of a gradually sloping mound, much like a scrub turkey's nest Fill the cask with stable manure Sow the melon seed outside and a little distance from the cask Every day or every second day when the plants have begun to grow vigorously, water the manure in the cask The liquid passes between the staves, and thus fertilises the plants The distinct advantage of this process is that during dry weather. when surface watering would only result in baking and cracking the soil. the plants draw moisture and nourishment from below, and thus the soil round the roots is kept constantly moist

Gardening for April.

KITCHEN GARDEN.

Gardeners will be kept busy this month. Sow all kinds of vegetables—Cabbage, Cauliflower, Kohlrabi, Kail, Celery, Turnip, Peas, Broad Beans, Spinach, Mustard and Cress, Lettuce, Onions, Red and Silver Beet, etc. Plant out Cabbage, Cauliflower, and Celery, and earth up those planted last month, Sow Parsley and other herbs. Give top-dressing of manure to Asparagus, Seakail, Strawberries etc. Plant Potatoes. Take up Yams and Sweet Potatoes. Transplant and divide all kinds of herbs, renewing the edges formed of them wherever it may be required. Dig and manure land for future plantations.

FLOWER GARDEN.

Continue sowing hardy annuals and perennials. Divide and transplant the latter, also evergreen shrubs and trees. Plant bulbs of early-flowering sorts. Propagate by cuttings Roses, Honeysuckle, Buddlea, etc., as they will succeed much better if put in early. Dig and manure flower borders, and keep the garden generally in order. Renew edges. Trench where not previously done, and lay out new grounds. Layer hard-wooded plants. Sow Primula, Pansy, Cineraria, Calceolaria, Mimulus, etc. And single pot the seedlings of former sowings of plants.

FRUIT GARDEN.

Prepair ground for receiving young fruit trees and vines early next month. Though rather early, Peaches, Nectarines, and Cherries may be pruned towards the end of the month to fill up spare time.

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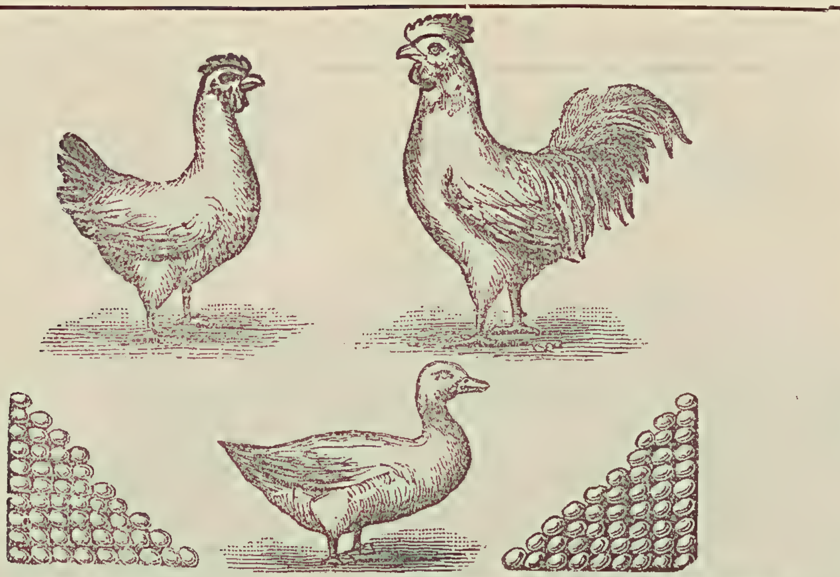

Fowl Cholera.

Fowl cholera is rapid in its invasion and course. If the symptoms are noticed early the bird will be found dull and listless, rocking its body and dragging its legs as though they were cramped) when walking The feathers are ruffled and the wings droped The eyes are more or less sunken. the eyelids swoolen, and frequently an irritable condition of the latter exists, causing the bird to scratch the parts. Appetite is suspended, but there is frequent thirst, and inclination for warmth is manifested by the affected birds huddling together, or keeping in the sun. Diarrhœa is present throughout, being at first glairy and mucous, and subsequently white and frothy, or bubbling. As the malady proceeds the depression is more marked; the eyelids are closed, the head carried low, and swollen from effusion of serum and congestion of the blood vessels. The gait is staggering, the evacuations become very white, clearer, streaked with blood, and offensive The tail feathers, and also about the vent, are wet and matted together. The mouth will be found full of dirty, sticky, or frothy matter, and the same is frequently seen to issue from the nostrils The comb becomes flaccid and deepened in color towards its borders. All these symptoms continue to increase in severity as a fatal termination approaches. The bird is disinclined to move, and either stands with its back raised, the wings being away from the body dropped, or squats on the ground with its beak in the earth and the wings spread out, the breathing is short laboured,and the crest swoollen and black in colour, the vision almost lost, the plumage lustreless, and finally the bird dies in a state of stupor or convulsions.

With some birds before death there are nervous movements, the respiration becomes labored and convulsive and shakes the body; at intervals a harsh, guttural cry is emited—a kind of hiccough. At the same time the feet and wings are agitated and contorted, a little foamy saliva flows from the beak, a small quantity of white or greyish bubbling fluid is expelled from the anus. and the bird perishes. In other cases there appears to be no convulsions, and it is not rare to find them dead on the nest without a straw having been disturbed. Others before death turn round as if attacked with vertigo. In some there is a kind of vomiting of a glairy, yellowish-white fluid; and the diarahoea, which is nearly always present, is either grey, white, yellow, or black in colour, or streaked with blood. The duration of cholera may vary from a few hours to two or three days.

Treatment.

Despite the fact that many authorities are unanimous in the conclusion that treatment is of little avail, they admit that if cholera can be detected in the early stage some cures may be effected; the following treatment being suggested:—Take 25 grains of pulverised camphor, 30 grains of cayenne pepper, 48 grains of pulverised rhubarb, and 60 drops of laudanum' mixed all together, and make it into eighteen pills, giving each bird sick one pill every three hours.

Ducks for Export.

We take the following from the "Journal of Agriculture," contributed by Mr. A. Hart, Poultry Expert.

The duck-breeding industry of the State at present offers very favorable prospects. We have one of the most suitable climates in the world for this purpose. Our other advantages are equally favorable, and the present price of grain, root crops, milk and all other foods must be taken into consideration, and weigh largely in favour of this industry.

The local trade in ducklings could, no doubt be much increased by a necessary improvement in the breeds, quality, &c., of the birds rared. We have also an unlimited market in Great Britian and South Africa for properly-fattened poultry of all kinds. Ducklings are specially suitable for the purpose of export, and there is every reason to believe that this industry, if properly fostered and developed, will result in the establishing of a very large and important trade in the near future. There is, however, one point which must be regarded as of the most importance in this industry, and that is the proper feeding of the ducklings intended for market or export. It does not matter how suitable the breed or cross may be, or how large the frame, if proper food is not given liberally such stock are worthless for the table, and failure is certain.

The best months for export are from December to March. Ducklings sent in for export should not be less than 4½ lb. each live weight They should be as uniform in size and quality as possible An Aylesbury and Pekin cross is preferable, the Aylesbury drake and Pekin ducks being the most favorable way of mating.

For the first month they should be fed four times daily, and after that three times. The food should be good and sound. During the first week the food is given fairly dry and crumbly, and after that moist. Bran. pollard, vegetable and root crops are the staple foods. Skim milk should be used and all food scalded with boiling water and allowed to cool before feeding. Grit and green food should be given liberally. Wheat and barley should be mixed with the soft food Care should be taken to have all the surroundings perfectly clean. The fattening process should be completed in from ten to twelve weeks. The cost of feeding should be about 1s 7d per pair. The weight of the ducklings at this age should be 9 or 10 lbs. the pair. At the average price of 6d per lb. live weight, would return 4s 6d to 5s per pair. Adding the value of the eggs (which would be about 1½d each) to the cost of food, would make the outlay 1s 10d, leaving a margin of from 2s 8d to 3s 2d per pair. At the early part of the season, ducklings would bring up to 7½d per lb for local consumption: but this would be for a limited number

Mr. Hart says:—I would call attention to the deterioration of ducks for table purposes through being crossed with the Indian Runners. The latter are certainly good layers, especially in the winter months, but they are altogether a failure from a table point of view and are sold at auction for very low prices. They are also useless as a cross with the larger varieties, and breeders should be careful not to introduce any of their blood into stock intended for breeding ducklings for table or export purposes

Turkeys.

To the inexperienced person who is contemplating the raising of turkeys for the first time, a few remarks as to general conditions required for best success and a little insight concerning their habits may not come amiss. The farmer who would like to try them as a sideline need not hesitate because of the lack of houses or, indeed, any accommodation other than the farm itself. A few boards, 14 or 18 inches wide, placed edgewise to form a pen of at least 8 by 12 feet in dimension or more—the larger the better—a rudely constructed shelter in one corner, and if the spring weather be very wet, another wide board placed on the ground in the sheltered corner for the mother hen to sit on when hovering over her brood. This is the only outfit absolutely necessary to successfully care for the chickens.

As to needing a house when the poults are strong enough to use their wings, they would willingly roost on its roof, but never inside unless driven in and the door shut tight. You should not begin with more than two or, at the most, three hens; then when you are able to raise eighty per cent. of their hatch, it will be time enough to think of adding permanent conveniences. After you become proficient, you will experience no trouble in raising ninety to ninety-five per cent. of all chicks hatched. One must grow up with this business as with any other. I am reminded of a neighbour woman (says a writer in an exchange) who removing from town to their newly-acquired farm, undertook that summer to care for the hatch of twelve hens. I foresaw the end, and advised her as best I could, but she was very enthuiastic, and worked early and late with them. But the final result of the whole season's work was an increase of an average of three-quarters of a turkey per hen.

Often in the late summer and fall visitors called here to see what they pronounced 'a sight—so many turkeys in one flock'—and will occasionally say that they do not see why everybody does not try to raise large flocks: that 150 to 200 should be more trouble fifty. To all who think this I have only to say: Make the experiment once, and you will then know more than I can possibly tell you on paper. The trouble seems to be that so many make the mistake of confusing turkey-growing with the chicken business, when really it is very different. While chickens often thrive to a certain extent under very unhealthy conditions, turkeys, on the other hand, while apparently very hardy, soon succumb if far removed from conditions naturally favourable to them. For this reason they should not be kept for long at a time in small pens, nor be compelled to roost in close houses, nor be fed on filthy ground.

To make a comparison that most farmers will understand, turkeys, for the greater part of the year, should be treated as nearly as possible like sheep. And here let me say that if at times I seem to say that turkey-raising is light, pleasant work, suited to the strength of a woman, and, again, that it is arduous labour fit to command the attention of men, it is not that I am inconsistent, for the keeping of pen is child's play to the care and work required for a large number. But whether one grows few or many, the profit in them is well worth the time and attention bestowed. The wider the range the less trouble they will prove. No one should try to raise turkeys unless they can command at least a few acres of land for them at home.

Where the average farm is large, and the range practically unlimited, the turkey may indeed be allowed to hunt its entire living until cold weather; but on a 50 to 100 acre farm, if it is not bounded with a turkey-tight fence, one must feed them bountifully and regularly to keep them where thy belong; for a turkey, unless better trained, always wants to be on the other side of the fence. You are not told this as a discouragement, but as a warning not to neglect the training of them at the proper time, for they can be readily trained to stay within proper limits, also to always stray in a certain direction. And it is still easier to teach them to come home to roost. To succeed in this, one must begin with them while the birds are young.

Some folks consider turkeys such senseless creatures, but this is because they have never studied them closely. On the contrary, I consider turkeys the most intelligent of all fowls. A number of hens kept through the laying and brooding season will present to the careful observer so many different phases of temperment—if I may be pardoned for the use of the term in such connection—as to be positively astonishing. And these same characteristic habits of the pullet will abide with her as a hen to such an extent that by this means one may be able to easily distinguish certain hens from others of the same flock.

This applies only during the breeding season, however, for as soon as they choose to consider themselves relieved of all their resposibility for the season they become apparently possessed of only ordinary turkey sense until the time comes that will once again call for the putting forth of their best efforts. We might almost deduct a moral from this peculiarity of the turkey.

As one cannot depend upon the mother turkey to bring her little ones home because of her instinctive caution, one must strive to gain the confidence of the poults. This is best done by giving abundant food—always reserving their favorite dish for supper—keeping up your custom of sometimes allowing them to fight among one another for the privilege of eating from your hand as you did for amusement when they were younger. Always treat them with uniform kindness and gentleness, and teach them to know the sound of your voice: and from the time they are ten or twelve weeks' old, the most careful old mother in turkeydom will find herself unable to keep them from hunting you up about sundown.

Undertakers.

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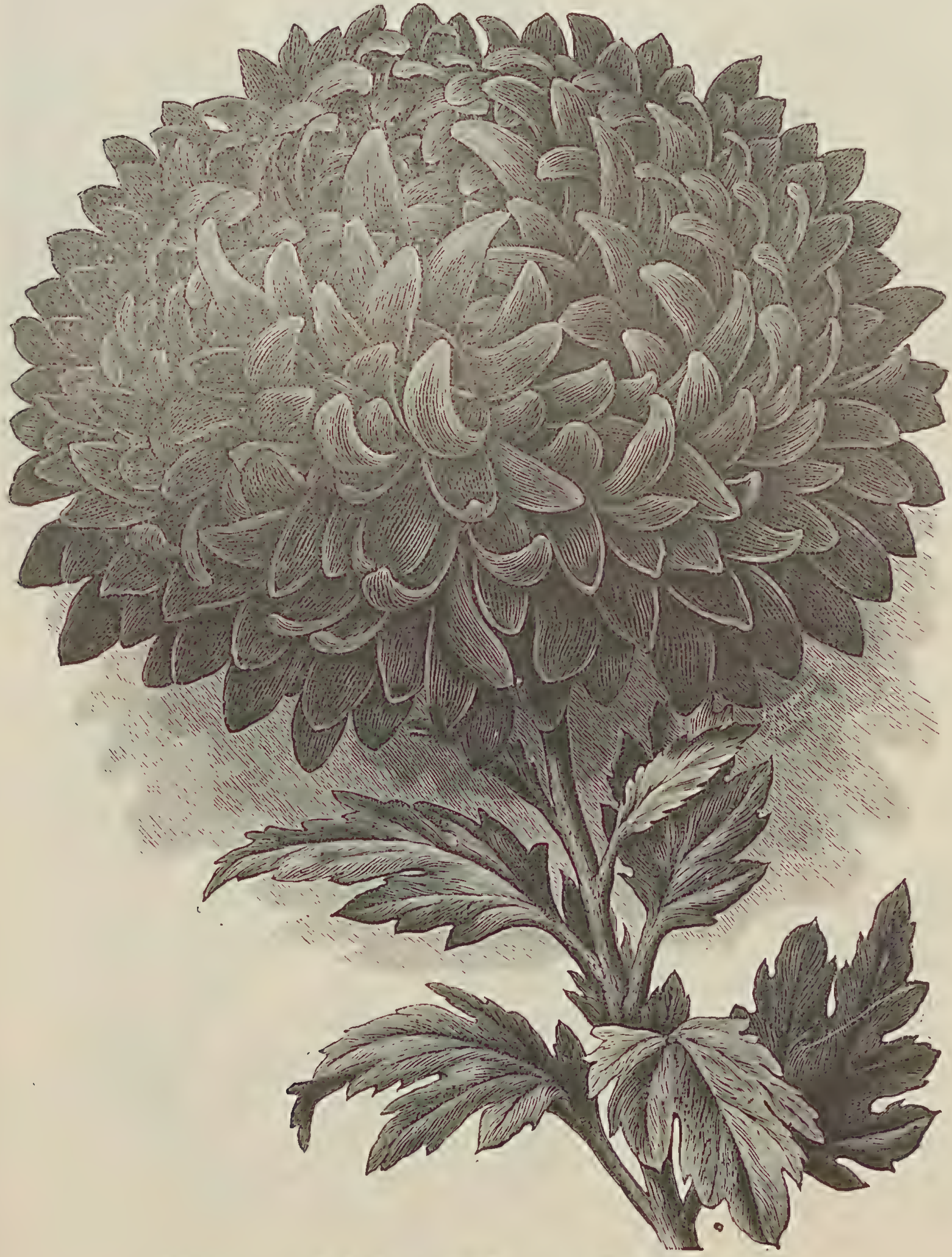
NOTICE OF REMOVAL.

The Office of "The Australian Gardener" has been removed from Genders' Building, to premises situated at the corner of Pirie and Wyatt Streets, Adelaide, and next door to Brown's Livery and Letting Stables.

The paper is published monthly, and is only 3s 6d per annum posted to any address in the Commonwealth,



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Dark Crimson-scarlet, long pointed petrals, beautifully incurved.

Pansies.

COX'S SPECIAL EXHIBITION.

It is a mixture of all Cox's best "Show" strains, specially selected for exhibition purposes. We confidently recommend this strain to our exhibiting readers. These choice strains are not usually of strong germinating power, and the seed should be carefully sown under cover in Feb. March, or April for the best results. Per pkt. 2s.

Cox's Mixed Foods for Birds, awarded Certificate of Merit, Adelaide Exhibition.

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Hoardings to Let for Advertising in City and Suburbs.

Month of April.

The month of April, with its anticipated showers of rain, usher in the beginning of unwonted activity to the open gardens. Cleaning up and battling with weeds, insects, and fungus pests, manuring and digging it in, planting out seedlings, and a general trimming up are all items of importance during this month.

Now is the time to consult your seedmen's catalogues and pay a visit to the nurseries. Any one interested in flowers need never be afraid to seek out a nurseryman and wander with him around his show of garden beauties He recognises it as part of his business, and a visitor may learn a great deal from a practical man in half an hour spent in such a pleasant fashion. The result will probably be that the visitor may spend a few shillings for some things that will give him the greatest pleasure not merely for the time being or a day or week or two, but for months, and may be for years. This not only for himself, but to his family, his friends, and all who pass by his garden. One swallow does not make a summer but one flower will often make a garden more beautiful than ever it was before.

It is rather surprising that the beauties in floriculture are not more sought after for presents to friends. What form of kindly regard is it possible to give for the expression of feeling than a beautiful flower. The pleasure is doubly enhanced by the efforts of the recipient to cultivate it and show appreciation of the kindly gift. We commend this idea to our readers, and now is an opportune time to make the choice.

TO GARDENERS.

Garden Land

On Torrens.

FOR SALE, 12½ acres, River Frontage. House 6 rooms, cellars, outhouses, etc

The land will grow anything

This place cost £950: will be sacrificed for £775.

Apply "H" This Office

Sweet Peas

The present is a favourable time to sow Sweet Peas. They like the soil well trenched and plenty of manure, worked into the bottom of trench. Decided colours show their colors best when planted in an open situation, the delicate shades, lilacs, and mauves show best when planted in a partially shaded position. All Sweet Peas should be copiously watered, and given alternate waterings of liquid manure during dry weather in the spring.

The following are new and of recent introduction, and can be obtained from Messrs E. & W. Hackett.

Blanch Burpee—Very chaste, of exquisite form and large size

E. S. Castle—Large, rich rosy-carmine, with slight salmon shading in the standard, producing a lovely and striking effect, especially in artificial light

Frank Dolby—A lovely pale blue, the same shade as Lady Orisel Hamilton, but very much larger, being the largest and finest pale blue variety of to-day

Mrs Alfred Watkins.—A supurb pale pink

Nora Unwin—Takes its place easily in the front rank of whites, far in advance of all other whites

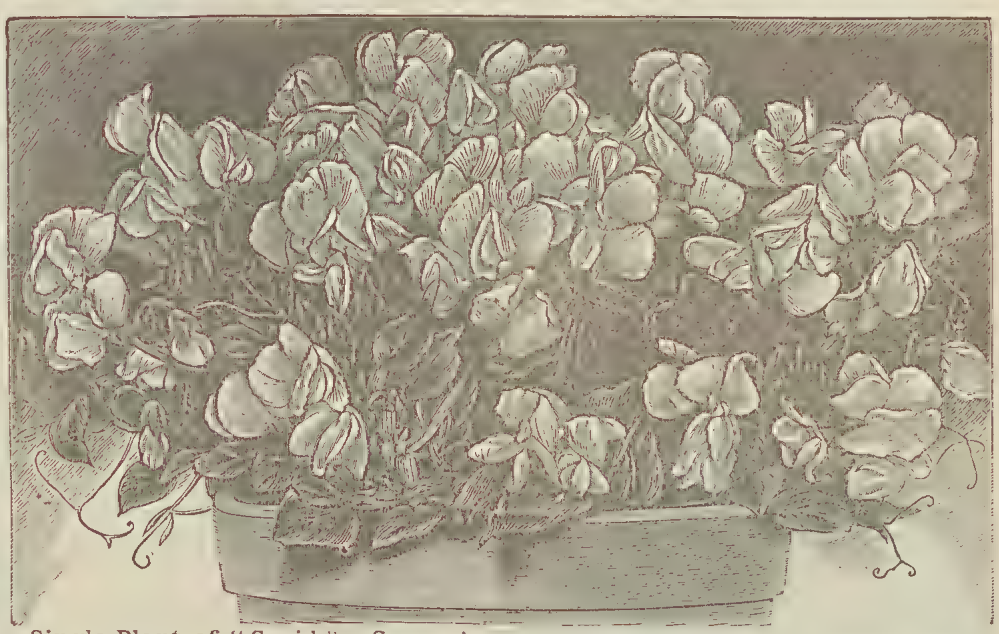
These four novelties are of the "Gladys Unwin" type, with the same large flowers and bold wavy standard, producing mostly four flowers on long stems

Black Michael—Reddish maroon almost a self

Bolton's Pink—Pale pink, large, good substance

Countess Spencer — Beautiful large flowered pink

Evelyn Byatt—Rich orange standard, wings deeper colour ; very striking



Single Plant of "Cupid." (Grown in a pot Engraved from a Photograph).

Gladys Unwin—A lovely pale pink: the forerunner of a distinct class of Sweet Peas

Helen Lewis (Orange Countess)—Fine orange pink

Helen Pierce—Bright blue mottled on white ground

Henry Eckford—Fine salmon-orange self

Miss H. C. Philbrick—Fine bright blue self

Phillis Unwin—Deep rosy carmine self

Queen Alexandra—The finest scarlet self

Scarlet Gem—Bright crimson-scarlet self

Dwarf Cupid, or Tom Thumb Sweet Peas. These Peas are of dwarf habit, not exceeding five or six inches, the individual plants spreading to ten or fifteen inches in diameter. Foliage is good, flowers are borne in clustres of two or three on stems about four inches long, quite as large and as deliciously scented as those of the Eckford class.

Giant White Sweet Pea, "Blanch Burpee."

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New Petunia.

KING ALPHONSO.

This fine new Petunia of the grandiflora superbissima class. bears very large dark crimson flowers, like those of the variety Prince of Württemberg, but the petals of this novelty are boldly waved and frilled to such an extent that the widely-opened brilliant black throat of the flower is almost entirely concealed. As the opposite electro shows, this new hybrid is of strikingly handsome appearance.

A New Poppy.

ADMIRAL.

This single paeony-flowered Poppy is of surprising beauty. Is is characterised by large round smooth-edged flowers of glistening pure white, with a broad band of brilliant scarled around the top, occupying a full quarter of the corolla. These two colours form an extremely telling contrast, similar to that seen in the variety Danebrog. Planted in groups this Poppy comes nearly true from seed, and produces a magnificent effect.

Hints on Bulb Culture.

Proper Conditions of Soil.

Only plant bulbs when the ground is in a nice friable condition, and never when the soil is wet and sticky Better plant late in good friable soil than early in wet saturated ground

After digging or trenching, the ground should be allowed to settle at least ten days before planting If planted on freshly trenched ground, as the land subsides the bulbs will be drawn down below their proper depth

Many amateurs have a tendency to plant too deeply, and thousands of bulbs are destroyed annually by too deep planting (crocuses especially suffer from this error) The proper guide to go by is the bulb itself, which should be covered with soil once and a half to twice its own depth but not more, measure the bulb from its base to its shoulder Thus a daffodil bulb measuring two inches from its base to shoulder should be covered with three to four inches of soil, and a crocus bulb measuring one inch in depth with only one and a half to two inches of soil.

Most bulbs object to the ammonical properties of manure, consequently hot or fresh stable manure should never be used to dig in the ground for bulbs, but only well decayed stable or cow manure

How to get Flowers in Winter.

Very few things are easier to grow than outdoor bulbs By sprinkling sand liberally round the bulbs when planting, they will thrive in almost any soil Most bulbs in a few years multiply enormously A writer on bulbs, some years ago said many people will spend shillings on coleus plants, which probably die in the same winter, whilst the same amount of money expended on bulbs would give the purchaser an infinitely more amount of pleasure and profit

The Polyanthus narcissus, such as the Paper-white, Solisl, d'or, with the lovely Roman Hyacinth. open the bulb season: then follow the Daffodils, Snowflakes, Snowdrops, later Polyanthus narcissus, Ranunculus, Poeticus, Freesias. etc.

Fresh manure must not be put in with bulbs, the best stuff to use is street sweepings about twelve months old

Slugs often attack Hyacinths when the buds are just breaking through the ground: a certain remedy is to place fairly fresh lime in a bag and shake it over the plants at night.

Ranunculus should be soaked in water a few hours before planting

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Manures.

Year by year. owing to constant cropping and want of attention to suitable rotations, our soils are becoming deteriated. Those elements so important to the health and life of all field and garden crops—viz. nitrogen, phosphoric acid, and potash—are gradualy but surely being diminished quantity, and if not replaced by some means or other, the result is inevitably an impoverished soil, and, as a natural corollary. an impoverished farmer. There are, undoubtedly, soils of such surpassing richness in all parts of the State that, although some of them, have borne over thirty successive wheat crops without rest or manure, they still yield from 20 to 30 bushels of good grain per acre. But all soils are not so constituted, and in order to keep their fertility, the manure becomes imperative. Of the chemical bodies (writes Mr. Brunnich. Agricultural Chemist) carbonic acid, water, phosphoric acid. nitrogen, potash. lime, magnesia, iron, and sulphuric acid—which are all absolutely necessary for the growth of a plant—not all need to be applied in the form of artificial manures, but only those which are shown by practical experience. to be more quickly exhausted and which are generally found in only small quantities in the soil, as phosphoric acid, potash, and nitrogen.

Our commercial manures are, consequently, chiefly composed of these chemicals, their value depending entirely on the amount and on the form in which the chemical compounds are found in the manures. Enormous quantities of artificial manures are used on the Continent of Europe. In the Canton of Berne, Switzerland, the amount of important plant foods put back on the land in the form of stable manure alone amounts to 4,700 tons of phosphoric acid 24,000 tons nitrogen, thus proving that the land was robbed of more than half of its most valuable constituents. for whilst, in addition, 1.300 tons phosphoric acid, 240 tons potash, and 93 tons nitrogen were supplied to the land in form of artificial manures, the average crops grown took out of the soil 12,000 tons phosphoric acid 41,000 tons potash, and 36,000 tons nitrogen. If this happens in a country where agriculture has reached a high perfection, how much more disastrous must be the result of such cultivation as generally practised in our State. Some of our farmers have manured, but it has been done in a blindfold and reckless manner. The farmer purchased, perhaps, a few bags of meatworks' manure, superphospate, and guano, and applied them alone or mixed without getting any result. and, of course, wisely abandoned further trials. In continuation of this subject, we commend to our readers Mr. Brunnich's valuable paper published in the "Queensland Agricultural Journal." of October. 1900.

Following, we give some further useful notes of manure from our exchanges :—

Application of Superphospate to the Wheat Crop.

It used to be a general custom to give the crop the benefit of an autumnal artificial dressing of two or three cwt. of superphosphate just before or at the time of sowing, and this is still the practice which obtains on the Continent. Moreever, it would appear to be in accordance with the views of agricultural experts. Thus, at Rothamsted, when it is thought desirable to apply phosphate of lime, a dressing of two cwt. is ploughed in before the seeding operation, and another authority recommends an autumn dressing just before sowing of two or three cwt. superphosphate per acre.

As opposed to this plan, the practice has grown up in this country of broadcasting the superphosphate in the spring, probably being found more convenient, and to answer equally well.

The wheat plant wants its supply of nourishment most when vegetation starts after its winter rest, and during the months of February, March, and April (August, September, and October, in our State) absorbs about three-fourths of the fertilising constituents required during its whole period of the growth, and it oppropriates greedily the quantities not only of nitrogen applied as nitrate of soda in the spring, but also the soluble phosphoric acid of the superphosphates and potash.

Nitrate of soda, applied alone, acts too quickly and with too stimulating a force; the plant should have at the same time phosphoric acid available to its rootlets.

It is told of a successful farmer that, clothed in a loose coat with two enormous pockets, one containing nitrate of soda and the other superphosphate, he used to walk over his fields of wheat in the spring and wherever he saw a patch looking weakly or yellowish, indicating insufficient nourishment, he used to spread a handfull out of each pocket, with the remark that he was mending his crop, and, as a matter of fact, he nearly always succeeded in getting a good crop.

A very suitable dressing is two cwt. superphosphate mixed with three-quarters of a cwt. of sulphate of ammonia, applied in June, and followed up in August, if the appearance of the growing crops indicate the want of it, by three-quarters of cwt. of nitrate of soda.

If the soil is of a chalky character, deficient in potash, three-quarters of a cwt. of sulphate of potash should be mixed with the superphosphate and sulphate of ammonia.

After heavy rains it may be expected that a proportion of the plant foods have been washed out of the soil, and therefore an artificial supply, such as we have above indicated, would seem to be desirable.

Decomposition of Manure.

The decomposition of manure depends largely upon the amount of moisture in the heap When manure is dry the chemical changes occur slowly, but more rapidly when the heap is wet. When manure is mixed with a liberal supply of absorbent materials, and stored under shelter, it will undergo but little change, but when wanted for use it may be decomposed in a short time if saturated with urine. If the bedding used in the stalls is cut fine it will serve the purpose desired fully as well as when uncut, but the main advantage is that the fine material may be more intimately mixed with manure, and will then better absorb the liquids, to say nothing of the easier handling, loading, and distribution of the manure on the fields when the season arrives for spreading it. Much of the value of manure is lost by mismanagement The quantity of manure made by a cow in one year is very large, especially if all the liquids and solids are saved. With the use of litter it is claimed that a cow will make a ton of manure a month, but this estimate includes the absorbent materials of the litter, which serve to prevent loss rather than to add anything of value to the manure.

Manure from One Cow

It is estimated that one cow will produce fourteen tons of manure in a year, including the bedding, and that the cost of the manure will be about 4s. a ton. Its value, however, depends upon the kind of food from which it is produced. Manure is never the same quality. The moment it begins to ferment no matter how it is kept, it gives off a portion of its substance (ammonia) in a gaseous form, but this gas may be largely prevented from escaping by the use of absorbents, day earth, water or acids. The fermentation of manure in the soil is both chemical and mechanical in its action on the soil itself. It tends to decompose the insoluble matter, being a disintegrating agent by reason of the fact that decomposition of manure in the soil induces and hastens chemical reaction of the insoluble substances.

Can you get cow or pig manure? If you can, then do so by all means. Both are splendid fertilisers for a flower garden, there being little heat in either of them, there is no fear of harm being done when they are being dug into the soil between growing plants. No manure—let it be cow or pig, horse or sheep or fowl—should be dug into the soil in a fresh state. It is better to stack it in some protected place, and only use it after it has been in the heap some months. Many gardeners have their manure arranged in three heaps The fresh manure is placed in one; this, after a month, is turned on to heap No. 2 where it is allowed to lie two or three months, and is then turned on to No. 3—the heap from which it is used.

Sheep Manure.

The manure from sheep is worth more than that derived from any other animal; next to that from the hog, and then from the horse, manures from cattle being less valuable than that from other animals. But in quantity produced cattle come first then horses, next hogs, with sheep last. The value of manure does not depend altogether upon the animal producing it, however, as the character of the food consumed largely influences the manure, and even the manure from the same animal varies in quality and quantity daily.

Sheep manure, which is particularly rich in nitrogen, is rather difficult to get, and consequently expensive, but should you have a chance of getting a load at a reasonable price (say, 6s. or 7s), seize it, especially if you are a carnation grower. This manure is one of the very best for the dainthus tribe, and may be used by covering the surface of the bed to the depth of one inch, and lightly forking it in.

Fowl Manure.

The excrements of fowls, and with them may be included pigeons, ducks and geese, do not form a rich manure, and are not to be compared for fertilising value to the genuine Peruvian guano derived from birds living on fish.

According to Dr. Aikman, fowl excrements yield from 0·8 to 2 per cent. of nitrogen ½ to 2 per cent. of phosphoric acid, and less than 1 per cent. of potash

The quality is very variable. According to series of recent analyses it may contain from—

5 to 20	per cent of	sand
50 ... 75	...	water
05 ... 25	...	organic matter
0·6 4	...	nitrogen
0·5 2½	...	phosphoric acid
0·5 1	...	potash

A fowl produces about 12 lb. in a year

As a means of preservation and preparation of the manure, it is a good plan to spread on the heap a little gypsum, or, better still, kainit, as the latter, besides helping to retain the ammonia, furnishes a proportion of potash; and if a little sulperphosphate is also added, the mixture would form a useful complete manure of a nitrogenous character.

Fowl droppings are a very valuable manure, but, owing to its heat, must be used with caution, especially amongst young and tender things. Its value is considerably increased by being dried in the sun, after which it is best stored in large boxes and kept in a dry place. Nowadays almost everyone keeps a few fowls, and by careful collecting and storing of their manure an appreciable increase in the profit accruing from them may be made.

Stable Manure

Stable manure should be kept long enough in the heap to enable all straw to become rotted, unless the soil be of a heavy clayey sort, when it would be benefited by digging it in quite fresh. A layer three inches thick spread over the surface and turned under would not be too much in such ground.

Of chemical and artificial manures suitable for the flower garden, may be mentioned (a) sulphate of ammonia; (b) superphosphate; (c) basic slag or phosphate.

The first of these—sulphate of ammonia—is a powerful nitrogenous manure and can be applied to beds during the early autumn or spring, at the rate of one pound of manure to twenty square yards. Before sowing it, break up all the lumps small enough to pass through an one-eighth inch mesh sieve. Sow thinly and evenly, carefully avoiding letting any fall upon the foliage of plants, as they are likely to be burnt with it.

Sulphate of Ammonia

makes a splendid liquid manure for cinerarias pelargoniums, etc. A tablespoonful in a gallon of water is quite strong enough It is better to err on the side of giving it too weak than that of giving it too strong

Liquid Manure.

In giving liquid manure of any kind, there are two rules that must be kept in mind—(1) only give it to healthy growing plants: (2) Water first with clean water.

Superphosphate

may be applied at the same time as the sulphate of ammonia, the two being thoroughly mixed and sown together: 4 lb. of sulphate of ammonia on twenty square yards of surface is a safe quantity to use.

For Roses.

This fertiliser is a splendid one for rose beds. Basic slag or Thomas' phosphate will be of small value unless broken and ground very small. When preparing new gardens, digging holes for trees, renovating borders, a sprinkling of basic slag on the lower spit does good.

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Adulteration of Milk.

The specific gravity of normal cow's milk is calculated to range between 1·029 and 1·033. As the specific gravity remains almost constant, it is possible to tell if milk is adulterated, also the form of adulteration practised. The addition of water to milk causes a low specific gravity, and the addition of skim milk a high specific gravity: very rich milk has naturally a low specific gravity, but the excessive amount of fat present is sufficient guarantee of its quality. What is needed to prove the common adulteration of milk—i e., the addition of milk or water—is abnormally high or low specific gravity combined with an insufficient amount of fat. It must be borne in mind that the addition of preservatives to milk increases the specific gravity, also that temperature affects the lactometer reading. All lactometers work best at the temperature at which they are standerised, which is usually 60 degrees Fahr. If however the specific gravity of milk is to be taken at a lower or higher temperature, an addition or reduction must be made. For every degree of temperature above 60 degrees Fahr add 0·1 to the lactometer reading (heat expands milk), for every degree of density below 60 degrees Fahr, deduct 0·1 from the lactometer reading Milk should never be tested for at least three hours after milking on account of the gases it contains when fresh.

Simple Method of Testing Milk.

A simple way of discovering if milk is up to standard, when scientific tests are not available, is to weigh one gallon of milk on a reliable balance, and to deduct the weight of the vessel. If the milk weighs 10¼ lb.—that is, ¼ lb. more than the same quantity of water - the milk may be accepted as containing the solid matter required. The specific gravity of good milk is calculated at 1.033, which corresponds in weight to an increase of about 3½ oz. on one gallon of milk at 60 degrees Fahr., compared with the weight of one gallon of water at the same temperature. Of course it is more satisfactory to have milk tested scientifically. but if this cannot be done, an approximate idea of the value of milk can be made. Of course it must be remembered, that if anyone desires to calculate the amount of butter it is possible to make from a given quantity of milk without the aid of scientific appliances, accuracy will depend on temperature and promptitude. To gain some idea of the fat contents of any sample of milk: Take an even sample of milk immediately after milking, set it from 4 to 6 inches deep in a dairy which registers 48 to 50 degrees, and let it stand undisturbed for thirty-six or forty-eight-hours. Skim the milk, ripen the cream and churn it. A separator should be used for separating the cream from the milk when possible, as this test is valueless unless the dairy registers 50 degrees below new milk heat. It is necessary to know the exact amount of milk used with the test, as ten gallons must produce at least 3 lb. of butter, or the milk may be considered below standard.

Dairying on Costly Land

Why is dairying in Holland prosperous in spite of her high priced lands, high taxes, and other high costs of production? The milk cows of Holland average 4.227 quarts of milk per head per year, on a conservative estimate. There is the one plain fact that underlies the most successful dairy practice on earth. The Hollandrs have for centuries bred cows for milk. They have bred big cows. They have fed and housed them scientifically. They desired milk to drink, to sell, and churn. They have as the result of their work those two famous breeds of cows known as the Dutch Belted and Holstein-Friesian.

They keep these cows bred up and fed up to a standard that means an average yearly production of 4,227 quarts, or over 9,000 lb. of milk per head. That is to say the Holland farmers on their £100 to £400 an acre dairy land milk cows that surpass the 'show' cows of American experiment stations and millionair farmers of other countries.

Are these Holland cows higher priced cows? Authorities estimate that the 960,000 milk cows in Holland are worth £10,050,000. That is an average of £11 10s per head.

It requires about 17,000,000 milch cows to produce the milk of the United States, and the average yearly yield per cow is about 1,300 quarts. With cows of the Holland type yielding 4,227 quarts per cow, our 17,000,000 cows could be cut down to 5,300,000 cows, and that would mean a sufficient saving in investment, in feed, in shelter, in labour, and other costs of elements to make the dairying interest the most profitable farm interest in the world. The position of the Australian dairy farmer as regards the average annual production of milk per cow per annum is somewhere about the same level as the American farmer. With better cows and better treatment of them our average butter yield per cow could be easily increased by at least fifty per cent.

A Cure-All for Pigs.

While a sick pig is generally hard to cure (says an American writer), there are many remedies prescribed for hog ailments. I have only one remedy for a sick pig, and that is a very simple one Rheumatism, paralysis, blind staggers, thumps, scours, etc, I treat all alike though in varying proportions My cure-all or panacea is nothing more than fresh new milk and turpentine. For a young pig, say, six weeks, I administer a teaspoonful of turpentine in, say, half a pint of milk Unless the pig is very sick, it will readily drink this If too far gone to drink, it must be administered with a spoon An older pig, however, will seldom refuse new milk, even when a tablespoonful is given in a quart or more I always keep a supply of turpentine on hand, and when there is anything wrong with my pigs, at once give a dose of turpentine and new milk It is the best remedy I know of for all the ills that pigs are heir to Grade the dose from a teaspoonful for a six-weeks-old to a tablespoonful or more for a mature hog The milk may be given ad libitum, or as much as the pig will take to drink freely

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Answers to Correspondents.

ROSEGROWER—The latest introduction to the Rose world is the Queen of Spain exhibited at the Temple Show, London. It was shown by Messrs. S. Bide & Son, of Farnham, an English firm. It is a hybrid perpetual, of a pale flesh tint with a dark centre, borne on erect stems. It is said to have well deserved the honors showered upon it as a desirable acquisition The Rose most admired at the National Rose Society's Exhibition. came from Alex. Dicksion & Sons, who consider that they have secured their best Tea Rose in one named Miss Myles Kennedy, described as a glorified Souvenier d' Elise Vardon. A charming colour in clear silvery white, shaded with buff, a deeper pink in the centre, and the back edge of the petals a slightly deeper shade of pink.

DAHLIA.—Yes. There is a new type of Dahlia introduced this year by Messrs. Hobbies, of Dereham, It is known as the Paeony Flowered variety, and is spoken of as an interesting and charming departure from the Cactus variety. It has the advantage of showing well up above the foliage, which is considered an improvement on the Cactus in that respect.

CHRYSANTHEMUM LOVER.—The latest fashion in Chrysantheums has been set by W. Wells & Co., of Mersham, who secured nineteen awards at the Royal Horticultural Society's Show for a new strain of singles. Great enthusiasm appears to have arrisen over a variety called Glitter, an imposing bloom, of a glittering yellow tint. Showing the popularity of this one was a pure white. Snowflake.

CARNATION —White Perfection is the name of the Carnation that gained the greatest honors at the Winter Carnation Show in London, but Dutton's Imported White Lawson gained the premier prize for thirty-six best at the same show.

WALLFLOWER.—This flower has almost gone out of cultivation in South Australia But in England nurserymen have renewed interest in it, and Sutton & Sons have come out with a new ivory white variety, which would be quite a new idea amongst the oldtime favourites of our grandmothers.

AMATEUR.—Now is the time to do your budding of Roses. It should have been done earlier, but is not too late now. The best answer to your request is shown in the picture below.

San Salvador Cobœa
A magnificent climber, with foliage of bright vivid green. The flower is strikingly effective, with long stamens.

Mammoth Perfection Cosmos,
The flowers are twice the size of the old Cosmos, and the petals are broader, forming a fine large round flower

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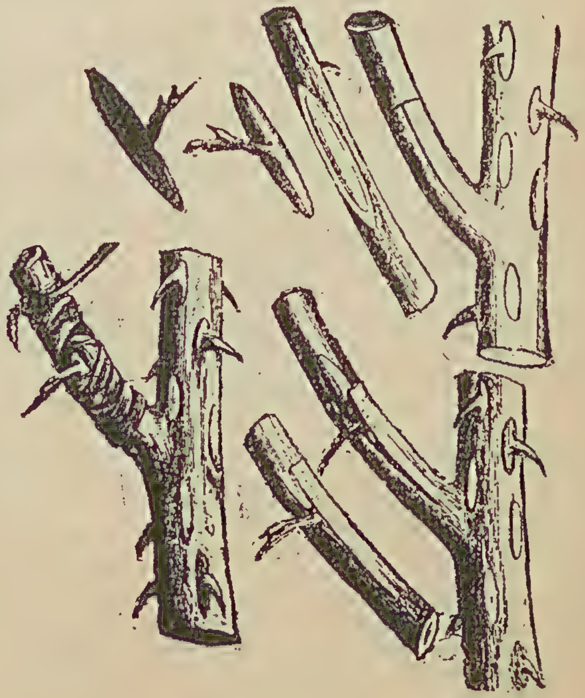
CACTUS DAHLIAS.



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May Number of 1907

The Australian Gardener.

The Gladiolus.

By J. Cronin.

Gladiolus is a genious of bulbous rooting, prennial plants, chiefly found native in South Africa. Some few species have been discovered in South and East Europe and West Asia, but the majority, and the most important, are natives of Cape of Good Hope. The original species are rarely found growing in gardens, except in botanical collections, having been superseded by hybrid varieties of superior character as ornamental plants. During the last fifty years hybridizers in various parts of Europe, and latterly in England and America, have paid special attention to the gladiolus, and have produced varieties of a greater diversity of colour in the flowers, larger individual and finer marked flowers, and more robust and larger spikes. There are several recognised types, noted for some distinctive marking or characteristic, among the most importent being the early flowering section, a hardy type that will endure severe frost: Lemoinei, red and yellow varieties with a large, purplish blotch on the lower segments of the flowers Childsii, an American raised type, with flowers of great size and bright colour: and Kelwayi, an English strain producing large spikes of finely coloured flowers Many of the finer new varities are raised from Gandavensis and Nancieanus, both hybrid types, of which improved varieties are also being raised. The range of colour embraces almost all shades of white, crimson, yellow, and purple, many kinds being finely blotched or marked with other colours.

The gladiolus is one of the most effective plants for garden display in mixed groups of plants, the bold bright flower—borne on long spikes, and lanceolate leaves—harmonizing with most types of foliage The flowers are specially useful for cuttings, being highly decorative and easily arranged. If the blooms expand during hot, dry weather they do not last well, but the spike may be cut when the lower blooms are opening, and if placed in water in a well lighted room every bud on the spike will expand. The course usually adopted by florists is to cut the spikes, and place them in water on the appearance of the first flowers, and hasten or retard the opening of the blooms by admitting, or preventing admission of light.

The most suitable soil is a rich friable well-drained loam, although the plants will succeed fairly in heavy clay, or light sandy soil, if well drained. The soil should be deeply worked and manured. Well decayed horse or cow manure is suitable, but no manure should be allowed to come in contact with the bulbs. For the production of exhibition flowers specially prepared beds are necessary These should be in a fairly open position, sheltered if possible from north winds, but not over-shadowed or invaded by roots of large trees. Special attention to the manuring and working of the beds prior to planting will be compensated by specially fine spikes of bloom in season. The bulbs of early varieties, of which "The Bride" is an example, may be planted during autumn in clumps or patches in the mixed borders, or in separate rows if grown in quantity. The bulbs of this class are small, and should be planted at a depth of about four inches. These may be left undisturbed for several years, in which case slightly deeper planting is advisable. About three inches apart in the clumps is a sufficient distance to plant. The Lemoinei varieties succeed the early kinds, and if planted during August or September will bloom about the end of December. They will well repay special treatment, and as they make their growth and bloom during dry weather, as a rule require a fair amount of manure and water. The bulbs of this section should be planted at a depth of six inches, and should be lifted annually. The larger flowering kinds may be planted at varying periods from november to January. The bulbs of these should be planted about one foot apart and at a depth of about nine inches, when grown in beds for exhibition. About two feet should be allowed between each row of bulbs. The beds should be mulched, and when the flower spikes appear the plants should receive a good supply of water if the weather is dry and hot. The plants should be staked as a protection against heavy winds. After the flowers are cut the usual practice is to let the plants finish their development without further cultivation. This practice is wrong, and is the principal cause of degeneracy in gladioli. The beds should be cultivated, and the plants kept green as long as possible, to ensure a thorough development of the bulbs for the following season. After the plants die down, the bulbs should be lifted and stored in a cool dry place until the next planting season.

Although the gladiolus is usually termed a bulb, it is really a corm, i.e., a solid bulbous root bearing a surface bud, new corms being produced on top of the old ones. As these corms increase they should be divided. They are also increased from the small bulbils that are produced at the base of the old corms, or at the ends of roots in some kinds. These should all be saved and rowed out separately in season when the largest will probaby bloom the same year, and the remainder the following season. They will be identical with the parent varieties. New varieties are raised from seeds. Seeds should be saved from the finest varieties, cross-fertilized with the pollen of other fine distinctive kinds. Seeds should be sown in spring in beds or boxes of light soil, where they may be grown for the first season, afterwards being lifted and treated as the bulblets. Many will bloom during the second season after sowing the seeds.

A number of hybrid varieties is annually raised from seeds, and distributed when when proved to be meritorious. There is, however, no check on the nomenclature of the gladiolus, as in the case of the rose, chrysantemum, etc. A fair collection should include the Lemoinei, Childsiis Nancieanus, Kelwayi, and Gandavensi types.

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Margaret Carnation.

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Practical Vegetable and Flower Growing.

Asparagus—As the soil is in a workable condition after the rains during last month, a portion of the garden should be prepared for this vegetable, but the planting need not be carried out until the end of the winter, or some time during the winter if the gardener desires to get the work over.

Beans, Broad—This is a good month for the sowing of this vegetable extensivly, and it will take the places of varities of the kidney bean during the winter months. Sow the seed in rows about 3 to 4 feet apart. The drills should be 3 inches deep and the seed may be dropped from 4 to 6 inches apart in the drills. Dwarf varieties can be planted much closser than the tall growing varieties. If artificial manures are to be used, try surphosphate of lime and potash. These will be found useful to add to dung.

Beans, French or Kidney—Sow a few seeds in the warmest districts of the State only.

Beat, Red and Silver—A sowing or two may be made during the month if any more plants are required. Young red beets now well above ground had better be well thined out. Silver beets can be transplanted when large enough. Very few of these are likely to be required by an ordinary-sized family.

Borecole or Kale (originally Kail)—As this is a good winter vegetable and likely to improve by a touch of frost, a little seed may be sown. Try the dwarf green-curled variety, for it is a good one, and if grown well is tender and sweet.

Brussels Sprouts—An admirable vegetable and one that succeeds best in the cool climates of the State. The very best seed possible to procure should be obtained This vegetable, like all the members of the cabbage family, need abundance of ood manure. Rotton dung that has not had its most valuable constituents washed out by rains is the best to use.. The soil should be dug deep and the manure well mixed with it.

Cabbage—This is a very good time to sow extensively of this vegetable. Plant out well advanced seedlings that had been pricked out, and prick out a few from seed bed.

Cauliflower—Sow seed during the month Prick out seedlings, and plant out advanced pricked-out plants. It is worth while taking a good deal of care in planting out cauliflowers, for much depends on their being moved so well that the growth is not checked. Water the young cauliflower well before removal, and water after they are planted. Use abundance of well-rotted manure, work the ground well and deep before planting, and during the growth of the plants keep the surface soil in a friable condition by frequently working it

Carrots—Sow extensively during the month as may be required.

Celery—Plant out, from time to time, a few well-grown seedlings. If the seedlings have grown large, remove several of their leaves and cut back their roots when planting out. Use abundance of manure, and water freely.

Leek—Seeds may be sown occasionally in small quantities during the month, and young leeks may be planted out in shallow trenches as they are large enough to handle that is, when they have grown to a height of 6 or 8 inches or so. The soil must be made very rich if good samples of leeks are required.

Lettuce—Sow as extensively as may be required this month. Plant out seedlings as often as it may be necessary to keep up a continuous supply. Transplant with care to prevent their roots being broken more than can be avoided. Use abundance of rich, well-rotted manure

Onions—Seeds may be sown largely during the month. Manure the ground heavily, and mix the manure well with the soil. Make the surface soil as fine as possible. Make it level when digging and be particularly careful to let it be well drained. Sow seeds in drills, and do not cover it deep with soil: just sprinkling the soil over it should be sufficient

Parsley—Sow a little seed, if plants are required. The garden should never be without some plants, for this is a very useful herb, and always in demand.

Parsnip—This vegetable requires the soil to be dug deep, it being a very deep-rooting plant. Sow a few drills during this month.

Peas—Sow largely in rows from time to time during the month. Stick the seedlings, when 2 or 3 inches in height, in order that plants may start to climb as soon as possible.

Try a row or two of the edible podded pea, which may be used pod and all, and is a very excellent vegetable.

Radish—Sow occasionally during the month, to keep a supply going. Very little space will be needed.

Schallots and Garlic—Plant out a few bulbs in rows, setting them about one foot apart in rows. Very little garlic need be planted, for it is not required much, as a rule, in the kitchen.

Herbs—Seeds may be sown this month of any kinds that may be required. Herbs are of great value for domestic purposes, and are nearly always needed.

FLOWERS

Plant out as soon as possible all sorts of spring flowering bulbs such as daffodils watsonias, hyacinths, tulips, sparaxis anemones, ranunculuses, crocuses, snowflakes, etc.

The autumn is a favourable part of the year for begining the work of flower gardening, and anyone who may happen to read these notes, and who may have unoccupied land, is urged to make a commencement. Flower seeds are heap and at a cost of a few shillings a very pretty flower garden could be made: an now is the time to sow all sorts of hardy annuals It is a good time also to sow beinnials and perennials, those plants which will live for two years or more, and those which live for many years. The annuals, as a rule, live for one season only. They grow, produce their flowers, ripen their seeds, and then die away

This is a good time of the year to plant evergreens of all kinds, and also for the propogating of plants from cuttings, and those who desire to increase their stock of roses from cuttings should take advantage of the best month of the year for this purpose.

Roses, dahlias, chrysanthemums of early varieties, carnations of the peapetual or tree varieties, bouvardias, and many other plants should be flowering splendidly this month.

Flower Garden.

Roses and chrysanthemums. grown from specially fine flowers, will require to be watered and fed with liquid manure, and the flower buds or shoots thinned. Frequent reference is made in these notes to the above plants, chiefly because they are the most popular among florists' flowers, thrive in most parts of the State, and are generally catered for at Horticultural Shows. The result of the treatment accorded them should also be an object lesson in special culture in any branch of agriculture or horticulture. One of the most important matters is the feeding of such plants with liquid manure. Such an application is without doubt the most prompt and economical method possible. The plant food is applied to the roots of the plants in the only form that they can absorb it quickly, it spreads evenly to all parts of the root system, and in the preparateon the various ferments that are needed to make it available at once occur. In some cases highly concentrated preparations are diosolved and applied at once to the plants. In others animal manures are employed, and although less pleasant in the preparation and application, are much cheaper and generally more effective than the chemical manures. Fresh manure should be used, dry old horse or cow manure being valuless. Cow manure is generally advised, chiefly because it is the least harmful, but it is not nearly as valuable for the purpose as fresh horse manure. Drainage from stables and cow sheds is more valuable than either, but must be allowed to stand for a fortnight at least, and be highly diluted before being used Liquid manures should be used very carefully, beginning with weak solutions and gradually increasing their strength Occasionly an application of clear water is necessary. Soot, fowl manure, blood manure, and guano, are all valuable for making liquid manure, but, excepting soot, are liable to "burn" the roots unless used very carefully. All animal manures used in liquid form should be allowed to stand several days after "mixing" before being used The usual plan isto place the manure in a sack and suspend it in a tub or other vessel, diluting the resulting liquid before application About 30 lbs. of horse manure soaked in 30 gallons of water will, after standing for a week, produce liquid ready to dilute at rate of 1 part to 20 clean water.

Chrysanthemums should be fairly forward and should be securely tied as need arises Dahlias will need to be thinned in their growth and flower buds. Any lateral shoots that occur on the selected shoots should be removed to within a foot of the surface The lower shoots may be allowed to grow and will produce fair blooms later on.

Roses started into growth should be kept growing steadily The plants will be benefited by the epplication of liquid manure once a week Where a number of weakly shoots occur they should be reduced to one or two. On the first appearance of mildew the plants should be "dusted" with flowers of sulphur, choosing early morning while the dew is on the plants for the application.

Carnation layers should be ready for removal from the plants, and may be planted out in their flowering quarters, or rowed out, to plant later. They should be attended to in regard to watering and cultivation should the weather be warm. Seeds of hardy annuals, biennials, and various perennials, may be sworn, and herbaceous plants divided and replanted.

Seedlings pansies, Iceland poppies, and other plants raised earlier may be planted where it is intended they should bloom.

NOTES ON SPRAYING

Mr. J. L. Phillips, Virginia State Crop Pest Commission, gives the following interesting notes on lime and sulphure-wash He says that the uncooked lime, salt, and sulphure wash, recommended by some of the American experts, where the heat generated by the lime was utilised to mix the other ingredients, has proved very unreliable. He advocates making this without the salt, particularly when used for Sen Jose scale and using only sulphur and lime. He gives the following formula and directions:—

Lime-sulphur Wash—Secure an iron kettle that will hold about 25 gallons, place over the fire, and put four or five gallons of water in it. When the water gets warm, add 15 lb. of good unslacked lime; as soon as slacking begins, add 15 lb. of sulphur, and stir the mixture. Continue to stir briskly, so as to mix the sulphur well with the lime, and add boiling water as needed, so as to bring the mass into a thick paste. Stir well while in this condition and smash all lumps; then add enough water to make fifteen or eighteen gallons. If the sulphur is lumpy, spread it on a floor and mash it with a shovel, or make into a pasty mass in the kettle, before adding the lime. Boil the mixture vigorously for forty minutes, and then strain into the spray barrel with enough water to make 50 gallons. The better cooked the more effective the wash. Either cold or hot water can be used in diluting the mixture after it has finished cooking, and it is better to add the spray to the water in the barrel than to first put the spray mixture in the barrel and add the water.

Arsenate of Lead Spray for Codling Moth.—The growers in several of the apple-growing districts of Victoria claim that the last year's experience has proved that there is no spray equal to this for destroying codling moth, and that Paris green is quite superseded, and even arsnite of soda (Kedzi's Compound), so much used in South Australia, will give place to this spray. The following are the reasons given:—First, it will not wash off the fruit and foliage if rain comes soon after it has been used: that in Paris green or arsenate of soda compounds of lime is often of inferior quality, or is spent and old before it is used, owing to the ignorance of the user, who thinks that any kind of lime will do for spraying; further, that the arsenic of soda compounds the lime is often of inferior quality, or is spent and old before it is used, owing to the ignorance of the user, who thinks that any kind of lime will do for spraying; further, that the arsenic of the spray is apt to burn and damage the foliage; again, that the spray, if properly made, never clogs the pipes or nozzle.

The formula, as given by Inspector Prescott, is as follows:—

1 lb. white arsenic
2 lb. carbonate of soda (crystals)
7 lb. acetate of lead
360]gallons of water

The arsnic and soda are boiled for about half an hour until they are dissolved in half a gallon of water. The acetate of lead should be dissolved in one gallon of warm water. When cold, the arsenic-soda blend is gradually stirred into the acetate of lead mixture until they are all thoroughly combined. This stock of 1½ gallons will give twelve pints, which can be bottled and securely corked: and each bottle will suffice for thirty gallons of water. The stock in bottles will keep, and can be stored away for any length of time.

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The Wise Gobbler.

Of all the flock the turkey cock was
was roosting on the lowest limb;
The females fat above him sat, and trembling listened unto him.
"Dear girls," said he, "I think I see a
hawk above us in the sky,
You come below, and I will go above to
guard you or to die."
With flapping wings the silly things flew
down upon the limbs below,
While he, the knave, in accents brave,
declared that he the first should go.
With good-night peep they fell asleep, but
soon woke with a frightful screech
As one by one the farmer's son wrung
every neck within his reach,
Of all the flock the turkey cock, aperch
upon the highest limb,
Alone was spared, who thus had snared
the silly hens to swap with him.
—Exchange.

Farm—Poultry

OBJECTS

In poultry-raising, as in any other branch of stock-raising or agriculture, the grower must have a definite object in view if success is expected

The object of this paper is not to advocate the raising of poultry as the sole aim of the grower, but to show how it can be profitably run as a side line to the various methods of farming, such as general farming, dairying, fruit-growing, etc

In any of the above cases, the systematic raising of poultry can be made to fit in with the ordinary methods adopted

The first thing necessary is for the farmer to make up his mind which branch of the industry he intends following—i.e whether egg-growing or the production of table poultry

To arrive at a determination in this matter, location must be considered By location I mean the position with reference to markets

If handy to railway, either branch or both can be run If the farm is situated at a greater distance, egg-farming would, I believe, prove the better side to follow In fact, taking it all round I am of opinion that egg-farming will always prove the more profitable side of the industry

EGG-PRODUCTION

In view of the certainty in the near future of the establishment of a good trade in the export of eggs to the home market during our egg harvest, egg-production will become one of our main industries

We possess an ideal climate for this branch of the industry. There is hardly a month in the year that a hen, if given free range on an average farm, cannot earn her own living and add to the profit of farm. This was proved during the dry spell in Queensland. When a shrinkage was shown all round on the products, the humble hen came out of the trial with good results.

It has been said by pessimistic writers that our climate was far too hot for successful poultry farming. The absurdity of this contention may be seen by anyone turning to the market reports: they will find that during our worst months, so far as heat is concerned, our birds are turning out their highest averages. A glance at results of laying competitions will prove this to those interested; and, if the grower cares to go even further afield for proof of the suitability of our State for egg-production, a comparison of results of the several competitions being held all over the Commonwealth.

TABLE OR EXPORT POULTRY.

The success of our trial shipments to London shows that poultry can be exported profitably.

Though not caring to recommend the growing of poultry for table or export soley, I am sure that the poultry farmer should not neglect this side of the business In the case of the egg-farmer, he must of necessity raise a large number of cockerels which, if of a suitable kind, will find a ready market in England, at very good prices.

The advent of the "general purpose hen" has done a great deal to improve the table qualities, as birds of a real good laying strain can also produce good table birds. The suitable breed will be mentioned at a later date, together with their qualities, as laying or table fowls.

SITUATION.

Having decided on embarking on either or both sides of the business, the situation of the poultry yards is the first consideration. It has to be decided whether the birds are to be given—

1st.—Free range—i.e., the free run of the farm

2nd.—Partial—kept in runs partly, and allowed free range occasionally

3rd.—Kept in runs—kept in enclosures constantly.

I must again refer the reader to any or all of the laying competition results. It will pay the grower for the little extra cost of yarding his fowls

The argument in favour of free range is, that the birds can do for themselves. That is, of course, true. If the grower cannot give his birds everyday attention, then free range will suit him best but he cannot expect the same results as from birds that are given every attention and kept in small lots.

The breeder must figure it out for himself, and decide which of the systems will suit his particular case.

Having decided, the next question is the housing of the birds. This can be of the simplest style; I prefer the movable house, open-fronted.

Here, again, local conditions play a part as in some districts vermin, such as native cats, etc., make havoc if the house is not securely wired in and floored.

SOIL.

The general situation should, if possible be facing east or north-east, the ideal position being a gentle easterly slope. Still, they will get along where these conditions are not possible. I have found poultry doing well on heavy blacksoil plains. In the latter case, growers should if possible, select a small spot a little higher than the surrounding ground, even if only large enough for the fowl-house. Poultry can be run on very poor country, a sandy soil being best. There is a wide range of choice between the sandy and the heavy black soils, but a happy medium is more often met with.

HOW TO START.

The question is often asked, How much capital is necessary to start poultry farming? It depends exactly on the extent to which it is intended. A beginner can start on practically nothing, if engaged in other branches of farm work, while the young stock is growing.

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PURE BREEDS V. MONGRELS.

It will not be out of place here to warn beginners against starting with mongrels, that take up the same time and space and the same amount of food as the purebred bird. The class of bird that pays best is, the bird that has been carefully bred for generations, with all the useful qualities handed down. This must appeal to the intelligent farmer, who knows that, if he is a wheatgrower, he must select the very best seed available. If a dairy farmer, he selects only stock from pedigree milkers; so in poultry farming laying qualities are bred by careful selection from pedigree laying stock. Is it reasonable to suppose that a mongrel that has been produced by haphazard means can compare with a bird that is the production of careful mating of pedigree laying stock? The fact is so patent that I will not take up any further space with an argument that must be so plain to even the beginner.

I would advise all intending to start, or those who already have stock and are anxious to improve, to purchase stock or eggs from known producers.

For choice, I would recommend the purchase of stock rather than eggs, for this reason: That it only means a little more outly, and you have a whole season start, as in the case of purchasing eggs you have all the risk attending the hatching and rearing of chickens, that are not available as breeders till the following season. If you purchase, say, a trio of birds, they will soon lay their value in eggs, and are good for several seasons, depending, of course, on age when purchased.

If the beginner cannot afford to purchase stock, then by all means buy eggs from pedigree stock and start on a fair basis. The day of the mongrel is past; like the stage coach, he has served his turn, and must bow to the inevitable.

Useful Hints for the Poultry-Keeper.

A setting of eggs will give you intact a share of the best blood in the State, and produce an extra fine pen of fowls. Provided you are willing to sell.

All or nearly all the people who are ex-poultrykeepers hold to the belief that they could make a success of it instead of a failure if they had the chance again.

Light and pure air in the poultry-house is an absolute necessity, and the inmates must have it to be in a healthy and cheerful condition, for fowls will not thrive in a dark and cheerless place any more than plants will.

If the penalty for selling decayed eggs were a heavy fine or a six months' holiday a vast crowd of tradespeople, who don't know how to tell a good egg from a bad one, would speedily discover a way to do it

Hens that lay eggs that have blood spots in them would be benefited by homoepathetic pulsatilla. Find the hen that lays such eggs, pen her separate, and give ten drops of the first dilution in half a pint of drinking water and feed non-stimulating food. There is inflammation in the oviduct.

The warning cannot be too often repeated not to give medicine in drinking water contained in metallic vessels. Not to dose a whole flock to cure a few sick ones, and not to use tin drinking vessels. Glazed or earthenware fountains make the best drinking vessels for poultry

Highly fed chickens which grow fast are mostly subject to leg weakness, which simply arises from outgrowing their strength, and must be met accordingly by animal food and tonics. Three or four grains of ammonia citrate of iron for each chicken given every day dissolved in the water in which their meal is mixed

When chicks die in the shell, the chances may be that too much draught of air came over them. When a hen is hatching, she will fight if even a feather is lifted from her. She will allow not the slightest change of temperature, and she will hatch as well in a dry place as in a moist location: hence never open the egg-drawer except to turn the eggs

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HATCHING—THE NATURAL METHOD.

Selecting Eggs for hatching.—In selecting eggs for hatching, care must be used, and all imperfectly shaped or thin shelled eggs should be rejected as well as abnormally large or small eggs. They should be gathered daily and carefully stored in as cool a place as possible.

Eggs to be hatched by hens or incubators should be as fresh as possible. Much better results will be obtained if this rule is followed out, particularly in the case of the incubator. Eggs should not be two or three weeks old at most and fresh eggs would give better results. Fair hatches have, however, been brought off under hens from three week old eggs.

Eggs, of course, will keep longer in winter than in summer.

If the natural system of incubation—viz., the hen—is to be used, a nest made of a bottomless box with clean straw placed on the ground should be provided; a shallow hole should be scooped out and covered with straw, on which the eggs are placed. The hen should be placed on the eggs at night, and should be well dusted with insect powder; she should be free from scaly legs or vermin in any form. A good plan is to set three or more hens the same day, in a very quiet place, and when, later on, the eggs are tested after all infertile and possibly broken eggs are removed, the eggs can be replaced under the hen, each having her full quantity, which will probably leave one hen without any. She can be then given a fresh lot. By this means every hen will be likely to have a good percentage of chicks, and no time or space is lost. Cards should be tacked on the box showing the date when set, the number set, the number of infertiles, and the date due: and lastly, the result. If these cards are kept they will furnish interesting and instructive records.

Food for Setters—The best food for sitting hens is whole corn. They should be taken off the nest daily if they cannot or will not get off. See that they return to their nest. If a number of hens are set together, they should be taken off the nest two at a time, and on these returning, others to be allowed off. This should be done at the same time each day. Cold water, grit, and a dust bath should be provided for each hen. If a hen is particularly wild or restless, she should be taken off and fed late in the evening. All the hens should be powdered once or twice during the sitting.

Testing the Eggs.—Eggs should be tested on the fifth day for fertility. This can be done by holding the egg up to a strong light, when the chick can be plainly seen if the egg is fertile. If infertile, the egg will show a clear pink color all over, and must be rejected. A good tester can be made out of a piece of cardboard. Cut a hole a little smaller than an egg, place the egg against the hole in front of a strong light. Then the small body with blood veins spreading all around the egg will be plainly visible. A good tester can be made out of a bicycle lamp by tying a piece of dark cloth across the glass and cutting a small hole in the cloth. The egg is then held up to the hole. Testing should be done in a dark room.

Moisture—If the weather is very dry, and hot westerly winds prevail, the eggs may be sprinkled, but, as a general rule, it is not necessary.

Chilled Eggs—If, after the first week, a hen should leave the nest for any length of time and the eggs become chilled the attendant need not give up hope. Another hen should be found to place the eggs under, and even if the eggs have been left for a day and gone stone cold, a fair hatch may be still brought off. There is enough life in the eggs after the first week to stand a lot of chilling in ordinary weather. By this it is not intended to permit carelessness on the part of the breeder, but only to point out to the beginner that he need not destroy eggs that have been deserted for a reasonable time.

When Hatching—When the chickens begin to chip the egg, it is generally a safe rule to leave the hen to herself: don't go fussing and counting the chickens, unless the hen is a particularly restless one, or in the case of the chickens being overdue—she will do much better if left alone. If some of the eggs seem to be behind time remove the chickens that have hatched, place them under another hen, and alow the late eggs a chance of hatching.

Notes on Stock Ducks

The demand for early ducklings on the London and other first-class markets increases, says the "London Agricultural Gazette," year by year, and excellent prices are always procurable during the spring months. Until recently the supply has been in the hands of specialists who devoted their whole time to the production of this class of poultry, but farmers are now beginning to realise what excellent opportunities they have in this direction, and how profitable a trade it is. Thus we find that many are turning their attention to this branch of poultry keeping, and certainly it is one that can be confidently recommended. The great difficulty, of course is to procure a regular supply of eggs during the winter months, because, unless this can be accomplished, failure is bound to ensue. There are a good many points that have a very material effect upon the egg supply, chief among which is the time of year the stock ducks are hatched. Early birds have to be depended upon, because ducks do not generally commence to lay until they are about six to seven months old. The present is not time, however, to discuss this point, but it should be borne in mind next spring.

The feeding of the stock ducks plays a very important part in determining the supply of eggs, as unless suitable food is given to the birds they will not obtain the ingredients for the formation of eggs. When the weather is at all cold, the first food of the day should consist of mash with the chill taken off; on no account should it be supplied cold, because if a quantity of cold water is taken into the system it represents a considerable waste of animal heat, which has the effect of reducing the yield of eggs. The mash should consist of meals, together with household scraps or a little farm or garden refuse, cooked or well soaked. For winter use, barley meal is perhaps the most suitable: but it is advisable, in order to retain a fairly well-balanced ration, to use a mixture. A little maize meal may be employed with good results, as, although a bad food alone, when used in conjunction with others its effect is beneficial. The following is a good preparation and can be recommended:—Three parts barley meal, two middlings, one maize meal; and during fine open weather one part bran together with what scraps there may happen to be. If the latter are unobtainable half-part of granulated or lean meat should be substituted. Some breeders use grain for the afternoon feeding, but I have always had better results by repeating the morning's preparation of mash. If grains are used, the most suitable are oats, wheat, and a little maize

Ducks are hardy birds and do not require elaborate houses, but they must be kept warm, dry, and free from draughts. It stands to reason that if the food has to be utilised for maintaining the temperature of the body there will be a correspondingly smaller amount for the production of eggs. Upon many farms there is a shed which makes an excellent sleeping place for ducks; if it has a cement floor, as frequently happens, it requires to be thickly covered with litter, in order to overcome the coldness The best floor is the ground itself, well littered with straw or dried leaves or bracken. If no shed is available, then a wooden structure should be erected, made of inch boarding, which should fit together well, in order to exclude draughts. It does not require to be more than three feet six inches to four feet high, as ducks sleep on the ground. If placed near a stream or pond, great care must be exercised that it is built well above the level of the water, as nothing proves more fatal to the health and well-being of the ducks than dampness in their sleeping quarters

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The paper is published monthly, and is only 3s 6d per annum posted to any address in the Commonwealth.

Posison in Duck's Bills.

It is a very usual for people to keep ducks (says W.A. in the "Journal of Agriculture") in the same yards with their chickens, and then to wonder why the chickens do not thrive. The chickens that are found dead they usually conclude have been crushed, because they usually present a flattened appearance. It is usual for chickens to appear thus when they have been dead for an hour or two, and this fact often deceives those who find them. In point of fact, ducks should not be kept with any other creature, as the slime from their bills is injurious to every living thing. I have seen a pig at death's door from the fact that the food left by the ducks was poured into the pig's trough. A pig has a very strong stomach and can digest food that would kill a chicken, but at the same time even a pig cannot thrive if ask to eat from the same dish as the ducks. Everything on the farm should have a place to itself. I have seen sensitive horse turn from his food in loathing when the clean sweet-smelling cows were chewing their cud near his manger. However picturesque the creatures appear herded together in the yard, it is the greatest mistake to keep them so, and, above and beyond all, keep the ducks to themselves.

Bacon.

A simple rough-and-ready device for smoking bacon is sent by a correspondent to the New South Wales Department of Agriculture. The outfit consists of a large hollow log, a case, or cask. If a log is used, cut off a piece about four feet in length, stand it on end, and drive a few nails around the top, inside, to hang the hams and shoulders on; then drive two forked sticks into the ground inside the log, one on each side: put a stick across, resting on the forked sticks, and upon this place two hooks—one at each end—upon which to hang two sides of bacon. With an inch auger bore a hole near the bottom, and when the pork is hung inside cover the top with two or three thicknesses of bagging. If the log is stood out of doors, a sheet of iron will be required for shelter in case of rain. Having everything in readiness, get a cold-blast smoker (obtainable at any leading ironmonger's), charge it with dozy—i.e., slow-burning smoky wood—and force the smoke through the auger hole in the log for about five minutes at a time three or four times during the day. A plug should be placed in the hole after each smoking. At the expiration of three or four days, the bacon will be nicely browned and ready to take out.

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The Rabbit Pest in a Nutshell

A Few Facts Worth Considering

We have received the following circular from Mr. W. Rodier, Tambua, Cobar, N.S.W. which we publish without comment:—

"1 The rabbit are polygamous

2 Because of being polygamous they have become a pest

3 This polygamy is caused by the spring trap and poison cart

4 It is impossible for them to be a pest and at the same time polyandrous

The spring trap and poison carts kill more males than females, this causes the rabbits that are not caught to live in a polygamous state, because of being polygamous the females are very much more prolific than they otherwise would be and produce more females than males Consequently any thing that kills the males increases the pest and acts in the same way as the proverbial snowball or the notorious chain letter, the longer they are continued the greater becomes the volume of the rabbits, and that is why the rabbits have spread from Southern Victoria well into Queensland and West Australia in spite of the hundreds of thousands of millions that have been killed or died by the droughts The remedy is to make the rabbits polyandrous, and to do this only such plans as catch the rabbits alive should be used, then kill all females and liberate males, and for convenience sake cut off half the near ear of all males let go, so that they will be known if caught a second time"

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Nutritive Bananas.

It has been estimated that a banana plantation will feed twenty-five human beings where a potato field of the same size would support but two, and a wheat farm only one It has also been ascertained that chesnut groves, with full-grown trees, produce six times as much food per acre as any cereal crop In view of these facts it has been suggested, says the "Family Doctor," that a time may come when the staples of human food will be mainly derived from trees, greatly to the advantage of the race

Practical Points.

Escallonia Macrantha

This charming rose-flowered shrub succeeds well in most localities Its rich glossy green foliage and compactness of growth renders it invaluable as a garden shrub It is also useful as a hedge plant, being of vigorous growth, and stands cutting Cuttings may now be put in, half sand and half loamy soil, and place in cool frame

Fuchsias

Cuttings of Fuchsias should now be put in This will produce excellent material for next spring It never harms Fuchsias to prune severely

Philadelpaus Coronarius

The Syringa, or Mock Orange, as this shrub is popularly called, is a great favorite with most people, and most gardeners even those of small dimensions, include it among the occupants Its popularity is due to several causes: Firstly, it is an exceptionally free flowering shrub, and secondly, the flowers are of good size, and very fragrant: thirdly, it blooms during January and February, after most of the flowering shrubs are over; and fourthly, it thrives in almost any kind of soil, and often under very adverse conditions It is an extremely old introduction, numerous varieties have been raised A few of the best are Double-flowered Flore Plena, the White Variegated, the Golden-leaved Aurea, Tomentosus, Lemonei, Microphyllus Cuttings of soft shoots root readily in a close frame in early summer

* * *

Many people think that Ferns should not be given liquid manure. This is a mistake, as a little decayed manure liquid given once a week is excellent; as also is weak soot water applied twice a week during growing season.

Verbenas make bright and beautiful beds during the summer, and are easily raised from seed or cuttings.

Carnations in pots need careful watering in winter. Always allow the soil to become fairly dry before giving a fresh supply, and if grown under glass, give plenty of ventilation.

With one or two exceptions, the older varieties of Zonale Geraniums compare badly with the newer sorts, and should be discarded in favor of the latter. The time is at hand for propagating plants for flowering next season: it is rather later for cold distrscts.

Adiantum Farleyense should not be frequently repotted: this noble fern is impatient of roots disturbance.

Leonots Leonurus, from leon, lion, and ous, an ear; in reference to fancied resembelence in the corolla. It is a very ornamental, small-growing shrub, with long spikes of brilliant scarlet flowers. It is sometimes called a Salvia, which it resembles very much,

When planting dwarf budded Roses, see that the union is placed below the surface of the soil; this will give the Rose a chance to make roots upon its own account.

Phloxes are easy to propagate. The best plan is by taking cuttings of young shoots, dibbling them into pans or a bed of sandy soil. This may be carried on any time in the summer, and plants thus procured are much stronger than when propagation is effected by division of roots. If one can spare a frame and make up a bed of leaf-mould and sandy loam, a nice stock of plants may soon be got together for blooming the following year. In planting them out in the garden one should if possible, give them a deep soil enriched with rotten dung, as they pay one well for liberal treatment and benefit greatly by a cool bottom, especially in a dry season.

Answers to Correspondents.

S. H. R., Payneham—Asks is this the a good time to give a mulch (or liquid stable manure) to Orange trees. The best time in the year is February or October; if given now, will, produce new growth and be very detrimental.

Subscriber—Ether and cloroform, so useful in sending men to sleep, have the very opposite effect on plants, which are stimulated to the greatest possible activity by these drugs. In Denmark and Germany advantage has been taken of this fact to force flowers in rooms and glasshouses and to make them bloom out of season. The result is said to be marvelous.

Poisonous Flowers.

People who are fond of flowers will learn with some suprise that quite a number of favorite blossoms are actually poisonous, and should for that reason be handled with extreme care. Generally speaking, all flowers grown from bulbs are dangerous in sick rooms, and there is no doubt that Hyacinths, Lily of the Valley, Tuberoses, and Narcissi should never be sent to invalids, since they may prove as harmful to a person in a critical state of health as a dose of morphia would be—without, of course, the benefit which that drug sometimes confers. Another common flower whose odor is noxious is the Poppy, which causes violent headache together with a disinclination to move about, Naturally it requires a very large number of Poppies to cause such results, and the handful of blossoms cultivated in our gardens, can scarcely be called dangerous In Asia Minor, however, where large fields of Poppies are cultivated for their opium tourists have often been miserably ill for hours after inspecting the plantations, and two cases of death among English tourists were traced to this cause. The Primula, too, which is such a favorite flower, should only be handled with extreme care. One variety, known as Obconica is so dangerous that if there is a scratch or a prick on the hands when touching it an unsightly skin disease is certain to appear, accompanied by a painful itching.

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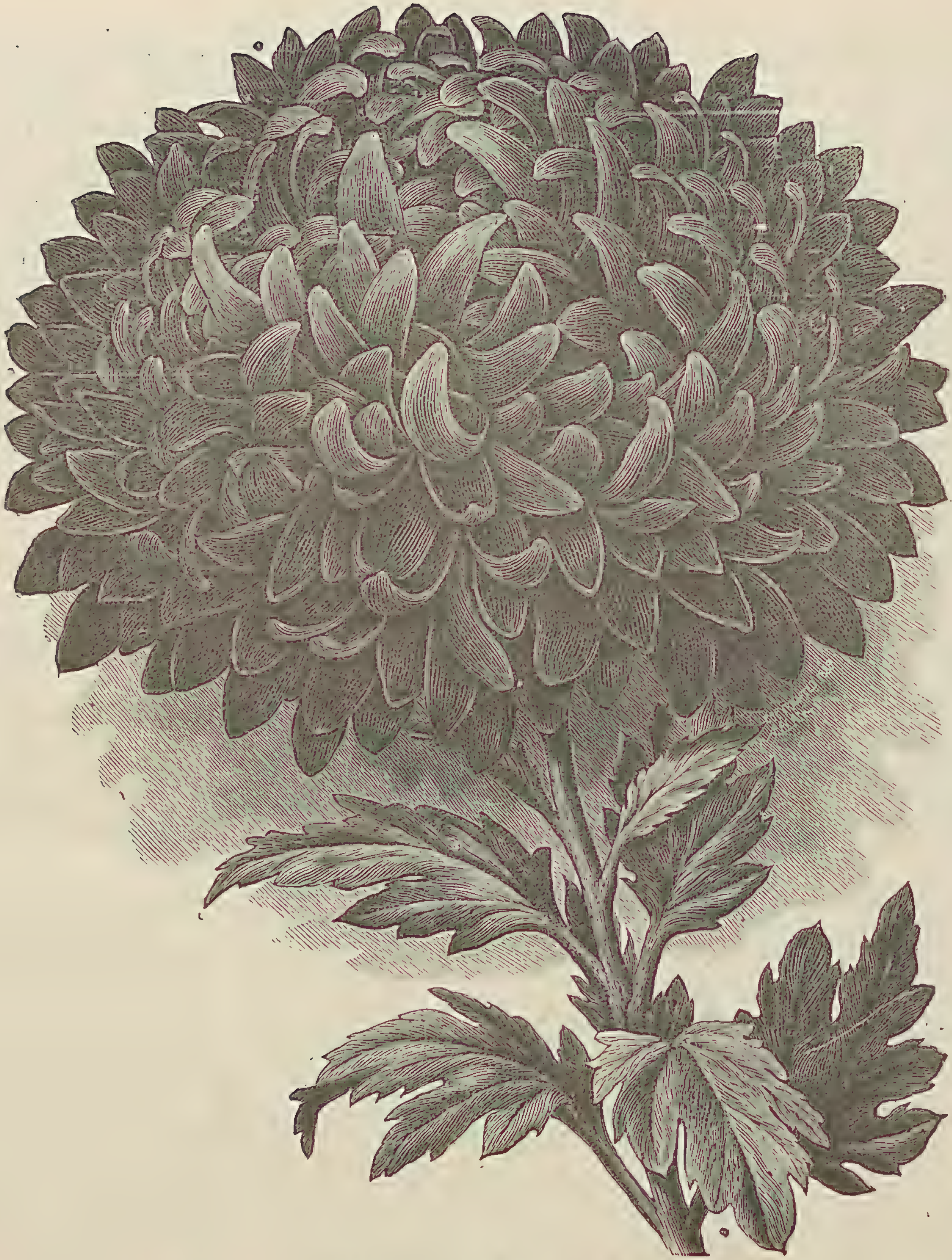

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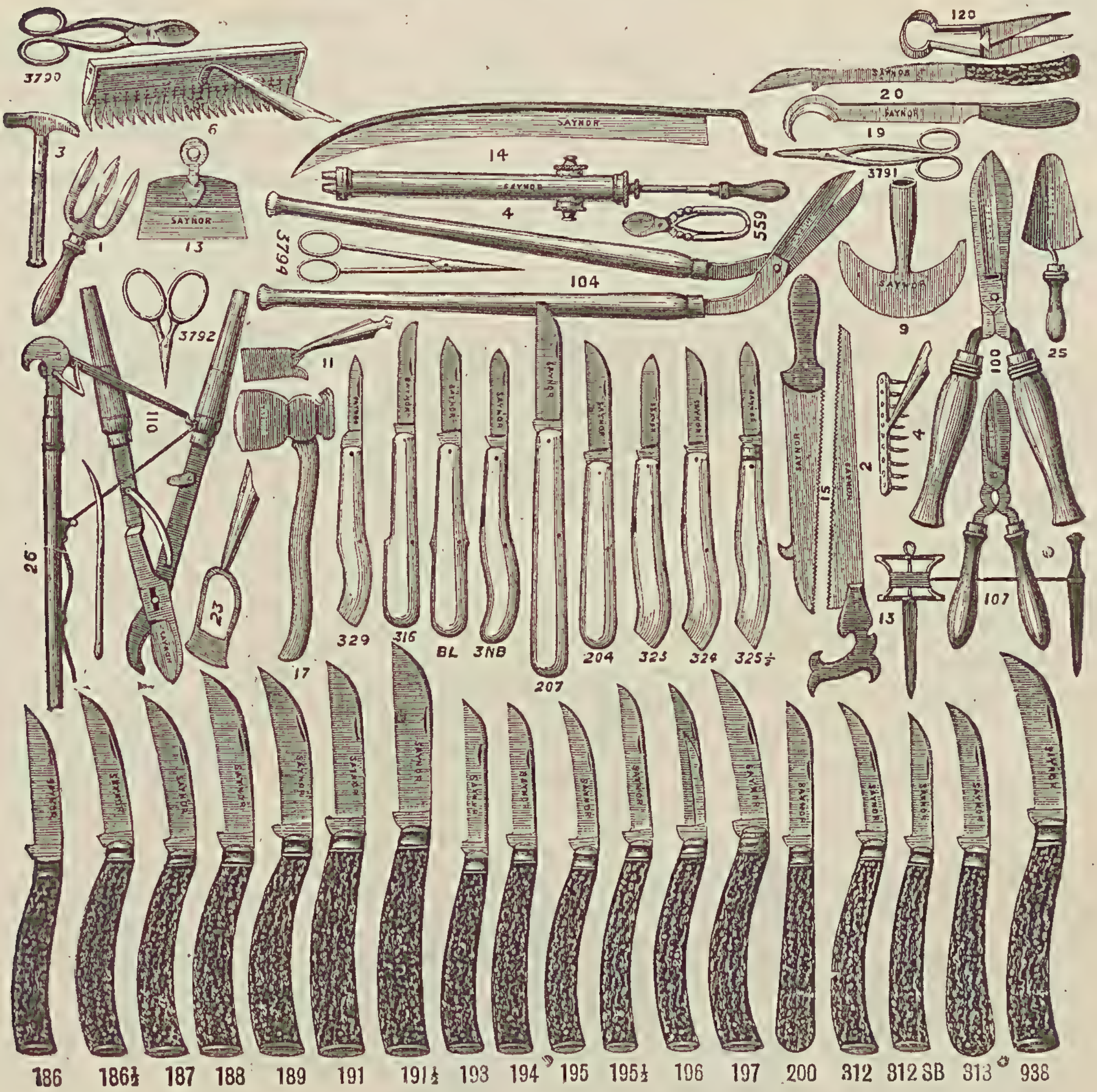

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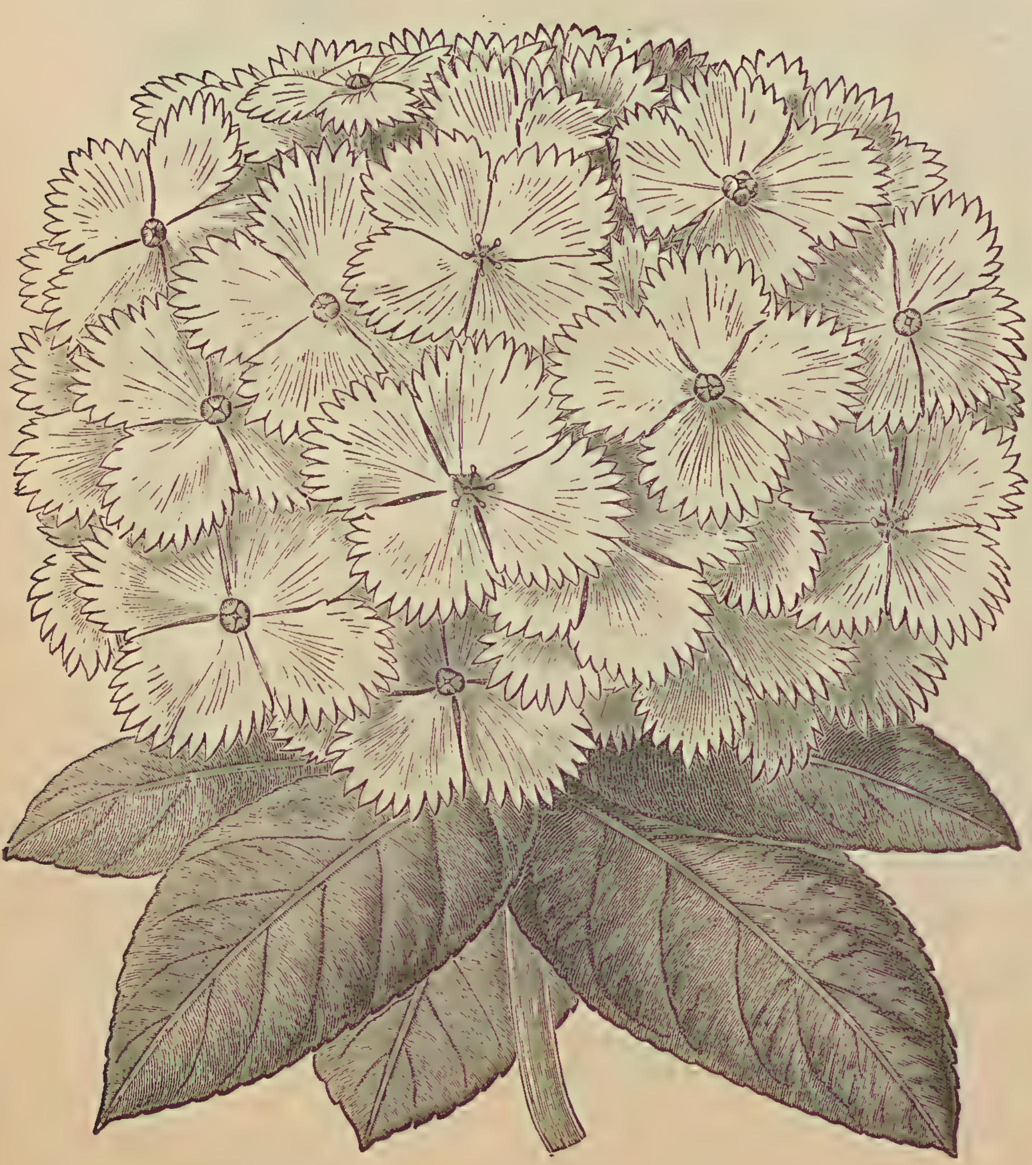

HYDRANGEA

(Hydrangea alba Fimbriata)

The flowers of this handsome Hydrangea are borne in immense trusses, sometimes nine inches in diameter; the bracts are of the purest white, most elegantly fringed in a very attractive manner, giving it a most distinct appearance. the flowers having a crimson spot in the centre

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June Number of 1907

The Australian Gardener.

JERUSALEM ARTICHOKE.

The Garden.

Vegetables.

(BY W. S. CAMPBELL).

Cold weather is now setting in all over the State, and except in a very few localities, the summer, or tender, vegetables, or most of them, are at rest or have died away. The Jerusalem artichoke, one of the resting vegetables, should be ripe and quite ready for digging; but it may be safest merely to dig only the tubers that are required day by day, instead of raising the lot and chance their keeping. They do not keep very well above ground, even though much care may be taken in lifting them, and unless the ground in which they have been growing is required for other vegetables they may be left undug. Another resting vegetable is the onion; but all that are ripe should be lifted and kept in an airy shed with plenty of ventilation. Onions, if of a sound-keeping quality, should remain good for months if tied up in 'strings' and hung out of the way. When lifting onions take care not to bruise them nor let them dry in the sun, for if they are sun-dried they are not likely to keep good for any length of time.

Asparagus.—The best time to plant is early in the spring, but the ground where it is to be planted should be made ready for it in good time. Trench it 2 feet deep, keeping the surface soil on top. When trenching be exceedingly careful to keep the bottom of the trench even, or else water is liable to lodge in holes and hollows made by careless work. If the soil be not of good quality, mix in a good dressing of manure when trenching. There is no urgency for planting, as this may be done at any time before the shoots or buds begin to grow in the spring.

Beans, Broad.—Sow largely from time to time, in order to keep up a supply. Sow in rows, according to height of variety—from dwarf, about 1 foot apart, to tall, about 4 feet apart. The bean prefers heavy soil, and succeeds best in it, although good crops may be obtained from any fair kind of soil.

Bean, French or Kidney—Seed to a limited extent may be sown in the warmest districts of the State, but it is useless sowing where frosts are likely to occur.

Beet, Red and Silver.—Thin out young plants which are coming up from late sowings. It is not worth while sowing any seed during the month.

Borecole, or Kale.—Sow a pinch or two of seed for a trial.

Brussels Sprouts.—This is one of the best of vegetables, and should be grown extensively wherever it will do well. Sow a little seed in a seed-bed, and when the plants are large enough set them about 2 feet or so apart, in rich good soil.

Cabbage.—Sow seed now and then during the month, in order to keep up a supply of young cabbages for planting out when required. Sow but a few seeds at a time, for it is a great mistake to have on hand a large stock of old, weedy plants. Plant out any good, young cabbages in rich soil.

Cauliflower.—Sow a little seed and plant from seed-bed good, strong, young cauliflowers.

Carrot.—Sow seed from time to time as largely as you consider necessary, for this is a good time to sow the carrot. Early Shorthorn and Intermediate are good kinds for sowing this month.

HACKETT'S SELECTED INTERMEDIATE CARROT.

Celery.—If any plants are available set out a few in well-manured ground.

Endive.—Sow a little seed and plant out from previous sowing. This will succeed where lettuce would grow with difficulty, and is a good substitute.

Leek.—Seed may be sown largely, and any suitable young leeks on hand may be planted. The soil should be made rich and the leeks kept sufficiently moist as they grow. They will need a good deal of water should the weather prove to be dry after planting.

Lettuce.—Sow seed largely during the month, and plant out sufficient young lettuces to keep up a good supply.

Onions.—Seed of this important and useful vegetable may be sown largely during the month. Use plenty of manure, mix it well with the soil, and make the surface of the onion bed as fine as you can. Sow in drills about 1 foot apart, unless small onions are required, when seed may be sown thickly. Obtain the best seed procurable, although a high price may have to be paid for it.

Parsley.—Sow a little seed.

SANDRINHGAM CELERY.

Parsnip.—This vegetable requires the ground to be dug to a considerable depth. Sow a little seed from time to time.

Peas.—Sow abundantly from time to time, and keep a good supply going. Keep the soil well worked between the rows. Lime will be found most beneficial to apply to the soil for this vegetable. Sulphate of lime or gypsum is also most useful, and will be found to improve the flavour of the peas.

Radish.—Sow seed from time to time. Use a good deal of very well-rotted manure, and encourage the radishes to grow as quickly as possible; they will then be of good flavour and very tender.

Spinach.—Sow a little seed from time to time during the month in drills, about 18 inches apart.

Shallots.—Plant out some bulbs about 1 foot apart.

Herbs.—Sow a little seed.

Flowers.

Spring flowering bulbs should be planted as soon as possible, or else it will be too late for them if allowed to remain after this month.

Daffodils can be obtained now from seedsmen and from agents of seedsmen in the country at very cheap rates. These bulbs, having been acclimatised and raised in the State, should do well in gardens.

The autumn planting of evergreens should have been completed before this. Attend to recently-planted trees and shrubs. Protect them from strong winds, so that they shall not suffer from being blown about.

Sow seeds of all kinds of hardy annuals and perennials, and transplant seedlings which are large enough.

Dahlias and chrysanthemums will soon be out of flower. Let the Dahlias die down, but the Chrysanthemum stems may be cut away as soon as all the flowers fade. Let all suckers grow, and in August cuttings can be taken for new plants.

Preparation of ground for winter planting and material for enriching the soil according to the needs of plants grown are important at present. Most of the summer and autumn blooming plants will continue to flower more or less this month, and little can be done but maintain neatness until the time arrives to prune, store, or transplant the different classes.

In preparing new beds one of the most important considerations is, that the whole area is well under-drained. It is of even more importance than the cultivation of the soil, for no matter what plant food a soil may contain, it remains inert and useless unless an effective system of drainage exists. Well drained soil when cultivated is always warm and moist—conditions positively necessary for the perfect development of plant growth. Organic matter in the soil is decomposed and made available for plant food by the action of air, with its elements oxygen and carbonic acid gas, which is constantly in attendance on water moving through the soil. The proper depth to set the drainage material varies according to the depth of the soil or other sub-strata. In heavy retentive soils with a strong clay bottom, shallow drains set a few feet apart are best: in deep light soils the pipes or other drainage material will need to be placed in the clay no matter how deep it may be, to be thoroughly effective.

Where possible a compost heap or pit should be made, in which leaves, stems, and general garden rubbish may be partly decayed before being dug into the soil. Stable manure should be mixed through the compost and the whole mass occasionally turned over and watered if dry. Lime should not be added or any ammonia that may be present will be dissipated.

Seeds of sweet peas may be sown now. The most suitable soil is a fairly heavy, well-drained loam, although quantities of splendid blooms are produced on sandy soils. Stable manure is the most suitable fertilising agent, a little bone-dust, or superphosphate, also being of great benefit. Plenty of space should be allotted each plant, the most common mistake being sowing the seeds too thickly. Plants of hardy annuals raised earlier in the year may be transplanted to their flowering quarters. A fair amount of room should be allowed for each plant, a greater number of and far finer blooms being produced by a few plants well grown than by a quantity over-crowded and half-starved.

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FLAKE CARNATION.

Carnations.

With fairly moist weather conditions, planting out plants grown in pots, division of herbaceous plants that have finished blooming, and layers and cuttings propagated during summer. Carnations will thrive better if planted out now than at an other period. The soil being warm and moist, the young plants soon become established, and bloom freely in spring. If it is desired to produce specially fine blooms, the plants should be set out in specially prepared beds, and strong young plants, either spring cuttings or layers rooted during summer, selected. The beds should not be over-shaded but protected from hot north winds. Narrow beds that will accommodate two or three rows of plants are most suitable, the plants being set out 2 feet apart each way. Cuttings of tree carnations will root readily in the open ground if inserted in sandy soil at once. One of the largest growers in the State produces practically all his plants of tree carnations from cuttings planted in narrow borders near his boundary fences. The soil for the purpose should be sandy and unmanured. Where the natural staple is heavy and retentive, a little sand placed at the base of the cutting will facilitate propagation. The cuttings are best set out in rows, about 1½ feet between the rows 3 inches between each cutting. Short lateral shoots about three or four inches in length are usually developed along the shoots of the plants. These will root readily, and will make nice sturdy plants The only preparation necessary is to trim off the leaves for about half the length of the cutting, insert it to that depth in the soil, firmly press the soil around it, and water after insertion. Should the weather prove dry after planting the cuttings, they will need to be watered occasionally.

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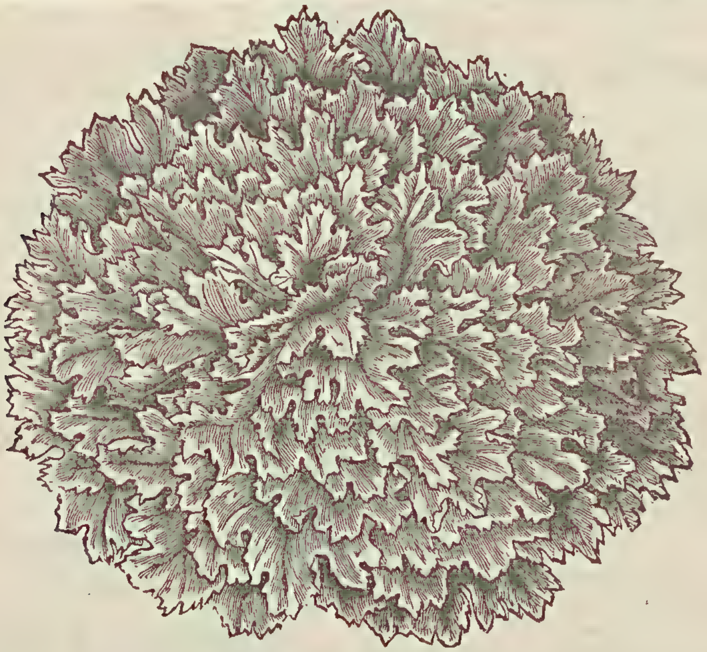

DOUBLE-FRINGED PETUNIA.

The Petunia.

(By J. Cronin.)

Petunia is a genus of dwarf perennial plants found native in South Africa The present garden forms are assumed to be hybrids from P. nyctaginaflora, introduced into European gardens in 1823, and P. violacea, introduced in 1831. Originally the petunia produced single flowers only. and it is due to the skill and care of the hybridist that the present popular double forms were evolved. The habit of growth was also improved by careful crossing and selection, and the hybrid varieties were soon cultivated to the exclusion of the original species, their flowers being more varied in form and colour, and of larger size and greater substance.

Some years back the petunia was a popular plant in our gardens, and very fine varieties were raised, named, and distributed by some of the nurserymen of that time. Ffne specimen plants grown in pots were often seen at the horticultural shows, and the plants were largely used also for bedding. The popularity has decreased largely, but lately they are again coming into favour. the introduction of new, large, brightly-coloured strains being mainly responsible The petunia is one of our best, hadiest, and most easily grown border plants. The plants endure heat and drought well, and continue to produce their attractive blossoms for a long period during summer. The single-flower varieties are most suitable for border decoration, or for massing in schemes of colour. They are not suitable for cultivating in places specially liable to dust, or where the atmosphere is heavely charged with grime or smoke, their viscid leaves becoming coated with such substances, which are difficult to eradicate, and which check the vigour and bloom of the plants.

PROPAGATION CULTURE.

Petunias are usually treated as annuals except in the case of specially fine varieties, The plants are raised from seeds annually, and when their blooming season is over are thrown away, and a new stock raised from seed for the ensuing season. Most of the double kinds are propagated from cuttings, though there are strains of seed that will produce about twenty-five per cent. of double varieties. The seed may be sown in autumn or spring. Autumn sowing is preferable, except where severe frosts occur in spring. The plants are strong, and will bloom early and continuously if well cultivated. The seed is very small, and should be sown in light soil in well-drained pots or boxes. The soil should be rather moist, and the surface firmly pressed and even before sowing the seeds. A very light covering of soil should be applied, and the whole watered very gently to prevent the seed being washed together in heaps, after which the pots or boxes should be transferred to a close frame, or a sheet of glass should be placed closely over them till the seeds germinate. This covering should be removed gradually as the plants grow, being finally removed when they are ½ in. in height. The plants should then be potted into single pots, or transplanted into other boxes of light soil, and grown on till spring, when they should be planted out. When the seeds are raised in spring they may be allowed to remain in the seed-box until ready to plant out where it is intended they should bloom.

Cuttings of the young shoots that develop laterally along the stems, or at the base of the plants, root readily in a cold frame, or under a bell-glass or a closely covered box, if inserted in sandy soil during April. The cuttings should be about three inches in length, the leaves trimmed from the lower half of the cutting, and the cuttings inserted around the edge of the pots of sand. The pots should be well drained, and the sand washed, to remove any fermenting medium. A box (like a butter-box) should be filled to within six inches of the top with light soil, sand, or ashes. Holes should be bored in the bottom to permit of drainage. The cuttings may be inserted, say, six in a 5-inch pot, always inserting cuttings around the edge in preference to the centre of the pots. Four such pots will be accommodated in a butter-box, and after the cuttings are inserted should be plunged to the rims in the box, lightly watered, and covered closely with a nicely fitting sheet of glass In such a frame a number of cuttings may be rooted during the season. After the cuttings are rooted, they should be potted into small pots and grown on till spring, when they may be either planted out in the border or re-potted and grown on in larger pots. Petunias succeed well in pots, and nice bushy plants may be developed by occasionally pinching the leading shoots, The soil for pot culture should be light and porous, and the pots should be thoroughly drained.

The most suitable soil for growing petunias in the open border is a moderately rich light loam, but the plants will thrive fairly in any fair garden soil. Excessive manuring will produce large plants without a corresponding increase in the number or quality of the flowers. A fairly open position should be allotted them, and ordinary border cultivation. including watering during dry hot weather, will suffice to bring the plants into a condition that will enable them to produce an abundant crop of flowers.

VARIETIES.

Most of the nurserymen have ceased to catalogue petunias under name, though they have named varieties in stock. A proportion of double flowering kinds may be expected from some of the special strains of seeds, of which Hender & Sons' double-fringed is one of the most reliable. "Giants of California" is a noted large-flowering single strain, although many gardeners prefer the smaller fringed varieties, especially for bedding purposes.

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The Orchard.

(By W. J. Allen).

Planting Young Orchards. — Where young orchards are to be planted this season the work of preparing the ground should be pushed on as rapidly as possible; that is, the land should be cleared, well fenced, ploughed, and subsoiled, and wherever irrigation is to be practised the land should be graded so as to facilitate the running of the water.

Wherever it is necessary to enclose the orchard with wire netting, and I am sorry to say that this precaution is necessary in a good many parts of the State, it is best to use a good wide netting with small mesh at the bottom, as it is wonderful through what a small mesh a young rabbit will get as well as how high a fence he will scale; therefore, if the orchardist wishes to preserve his trees from the onslaught of these pests he must see that the orchord is properly enclosed.

Lay out the orchard properly, giving the trees plenty of room so that there will be a sufficient area from which they can draw moisture to keep them in good growing condition during dry years.

At time of planting cut all apple and pear trees down to within a foot of the ground, and other fruit-trees to within 15 inches. There is nothing like a good low-headed tree which lends itself naturally to the arts of the pruner, sprayer, picker, etc., nor does it suffer so severely as the higher trees from the effects of high winds, the trunks do not sun-scald, and it is in every way a most desirable tree to have.

Refilling Old Orchards.—Refills in deciduous orchards should be planted as early as possible.

Citrus Orchards. — The orange crops this year are exceptionally good, and a number of our growers are talking of testing the European markets. I think Canadian and American markets might be tried also, as fruit was commanding very high prices during my visit last year, and prices are good again this year; but there would be no use in sending anything there but absolutely clean fruit. Both lemons and oranges are in good demand there during the months of July, August, and September.

Nursery Stock. — The wraps on all budded nursery stock may be removed any time now.

Passion-fruit.—Keep the fruit picked up as it falls, as it is then in its best condition: grade it nicely, and pack it in rows in the boxes. If growers are exporting any other fruits it would be a good plan to send a few cases of passion-fruit along, in order to test their carrying quality, as if once we can successfully land this fruit in the markets of the Old World and get it well introduced there, there should be an unlimited market for it. With proper attention, it produces heavy crops of fruit annually.

Choosing Varieties of Fruits to Plant.—Ascertain the varieties of fruits which find most favor in the markets, then select such kinds as will thrive best in your soil and climate. After planting, work, manure, and prune these in the most up-to-date manner, and when they come into bearing, grade the fruit carefully, pack it neatly—in a word, do every part of the work thoroughly, and you will not be disappointed when you make up your yearly balance.

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"Take-all" in Wheat.

It would seem that one of the forms of "Take-all" in wheat, as seen in the Cowra and other districts of New South Wales, is due to a stem-fungus parasite fully described in a recent number of the "Victorian Agricultural Journal." The immediate cause is the fungus known as "Ophiobolus graminis" resulting in the so-called Foot-rot, Black-Leg, or Take-all. Where the roots die, eel-worms will commonly find their way into the tissues. This has been observed in numbers of cases. They will not be a cause, but their invasion is an after effect.

Here, again, the only method of treatment is preventive. Selection of hardy suitable varieties and careful attention to the details of cultivation will minimise the trouble. Rotation is strongly advised. Oats, not being attacked, would make a useful change.

In all these cases of fungus attacks the parasitic organism makes provision for tiding over the off-season period by means which enable it to take up its parasitic residence again on opportunities presenting themselves. Fallowing will not kill them, the period not being sufficiently long to starve them to death. Moreover, side host-plants, in the shape of certain grasses, and possibly other plants for a time, will help to keep them alive when handy cereals are not present.

There seems to be little hope of getting rid of the cause. Our energies must be devoted therefore to breeding of hardy varieties, resistant to disease for the time being. It would appear that we must look forward to this as likely to be always required, for it seems the only way to shake off excessive loss. Hardy and resistant forms do not retain these qualities for ever; and so it is likely that the plant-breeder is going to be a much more important factor in agriculture than he has been in the past.

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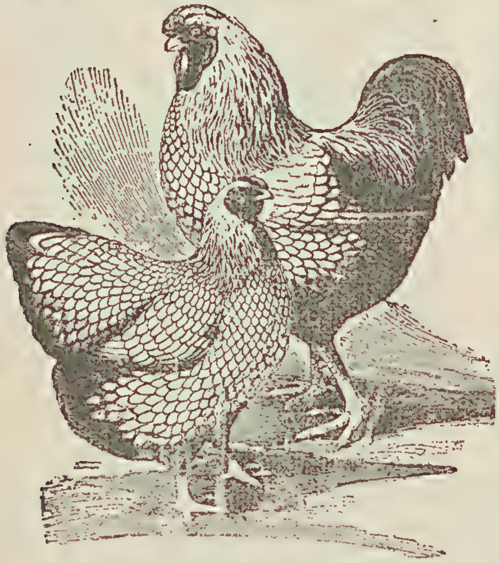

Poultry Yard.

Profit and Loss.

From thirteen eggs from a chicken man
He hatched twelve chickens fine;
Three of them drowned in the water pan,
And then he had but nine.

Nine little chicks had too much food:
Without exercise chickens can't thrive;
Four of the weakest died from the brood,
And then he had but five.

The neighbor's cat had an appetite,
From rise to set of sun:
Four more chickens went out of sight,
And then he had but one.

This one little chicken grew firm and strong
Sole owner of a handsome coop;
But a light-fingered nigger chanced along,
And now it's in the soup.

—"Poultry Monthly."

How and What to Feed.

Recently dry feeding from hoppers has been going the rounds of the American papers, as the latest "up to datest" method of feeding fowls for profit. Great things are credited to this new-old system our grandmothers practiced, and we say this out of respect to, rather than in derision of, our grandmothers' good points in the present qusetion (we presume our grandfather and modern civilization are to blame for our faults).

An article on this subject recently appeared in the "Leader," Melbourne, amongst which the following appeared:—"To-day, dry mash in the troughs, raw vegetables and good hard grain are in favor with many.

Of what benefit are these changes in the diet? The matter, says an American writer, has been carefully tested, and it is now held that dry food is far superior for several reasons:—First, after becoming used to it, the fowls prefer the ground grain to that which has been cooked or steamed. Second, it is a labor-saving plan. Third, it keeps the fowls in a more healthful condition.

The proper way of feeding the dry mash to laying hens or to growing chicks is that of strewing in straw or other light litter so that the fowls are compelled to scratch for it. They must have exercise. It should be given an hour or more before roosting, so that the fowls will have plenty of time to hunt. If fed in a scratching shed attached to the roosting pen, and the fowls have free access to it, they will get off their perches at break of day and scratch and work hard until the attendant comes out to give them their breakfast. This exercise so early in the morning will sharpen the appetite, and will put them in proper trim for a good day's work.

Useful Hints.

Be sure and get an early start hatching this year. You ought to have your breeding pens ploughed or dug up and planted with some kind of seed to grow green feed for the birds as soon as the early rains come. The birds ought to be in their breeding pens now, so that you will have plenty of fertile eggs to fill your incubator by the end of June. Get evary bird you can hatch out early, and don't hatch after middle of November, as late stock won't pay. July and August chicks are far ahead of the later ones, as they grow so rapidly, are more healthy and pullets lay younger and when eggs are dearer. The cockerels are also ready when the market is undersupplied, and when good prices are ruling. They have plenty of green feed to bring them on, and grow very rapidly. The late ones grow slowly, and pullets lay when eggs are cheap, and cockerels always go on to a glutted market. So make good resolutions, hatch early and increase your profits.

Don't go to sleep. Get up and have a look at the perches in your fowl houses and see if there are any more red lice on them. If there are you want to give your perches a good painting with kerosene or some other powerful insect destroyer at least once a week until the vermin are destroyed. See that your birds have a dry dust bath, because this will greatly help you to get rid of the vermin in your fowls. Try and have the open side of the dust bath facing to the east or to the north, so that the sun's rays may shine in on it during some part of the day. The reason for doing this is because the fowls love to dust themselves whilst basking in the sun. The dust bath ought to be kept dry during the winter months. Fine ashes alone with a little insectibane mixed with fine sandy soil makes a splendid dust bath.

Dorkings.

The Dorking is essentially an English fowl, and has for many years been the basis of the high-class table fowl. In Sussex, where chiefly the first-class table fowl of England are produced, the breed most in vogue is essentially of Dorking origin, or, perhaps, it would be more correct to say that the dark Dorking of the show pen had its origin in the table fowl of Surrey and Sussex.

There are three chief varieties, viz, the coloured or dark Dorking, the silver-grey, and the white. There are also cuckoos, but these, although once common enough, now are comparatively rare.

In all varieties of the Dorking, both in the show pen and for the table, an essential point is the purity of the white of the feet and legs. These should be white, even to the toe-nails, as this feature is associated with purity of race and fineness of flesh.

Another important feature is the addition of a fifth toe, and its distinct separation from the fourth; and how strongly it is inherited is evidenced by the persistence with which it crops up in any crosses, and with it nearly always appears the fine white skin and juicy flesh. The

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fifth toe is a distinctive feature of the Dorking, which but few other breeds have. Its utility has been sometimes questioned, on the ground that it is associated with an ailment known as bumble-foot. but probably this ailment has its origin in the weight of the birds, and the consequent heaviness of their alighting on the ground from a high roost, than in the fact of their having an extra toe.

The general shape of the Dorking may be described as rectangular, the rectangle being oblong, the back and the keel of the breast forming the long sides of the rectangle. Width of breast is an important point. The carriage of the bird is almost level, the shoulders only being higher than the tail. The legs are of medium length.

The color of the colored Dorking is not of primary importance, so long as the birds fairly approximate to the true colors. The comb in this variety, as well as in the silvers, is single and fairly large, and should be evenly serrated. The comb of the cock is upright, that of the hen is drooping.

The purity of the white color in the silver-grey cock, and the density of color and freedom from white of the black portions are important points. The hen is grey in body, with a salmon breast and silvery hackle, striped with black.

The white and cuckoo varieties are rose-combed as a rule, though, just as in the case of the colored variety, an occasional rose comb is seen, so in the cuckoo and whites, a single comb is occasionally met with, but not approved and never bred from.

The pure Dorking is undoubtedly a first-rate table fowl, but its laying qualities are not of the best. The average weight of the colored variety is from 11 to 12 lbs. for cocks, and from 9 to 9½ lbs. for hens. The Silver-greys were generally somewhat lighter, but exceptionally large birds have been known amongst them. A second prize cockerel, for example, weighed 12lbs, and now the silvers are very little less in body than the colored, but being a little longer in leg they do not look so massive. The Whites have improved greatly in size; they are also much sturdier in build than formerly, indeed two or three noted hens of this beautiful variety were models of true Dorking characteristics. This variety, never very common, has in recent years deteriorated in quality and number, and now it is only bred by a few of its old friends. Those who admire white fowls should bear in mind that some strains of Dorkings keep their pure white color all through the year better than any other breed of white fowl; by careful breeding their feathers resist the tanning influence of the sun almost as well as the feathers of a white Fantail pigeon.

The Dorking is on the average an indifferent layer. The color of the eggs is white or very light shade of yellow. They are good sitters, and respond readily to artificial fattening. Dorkings do not thrive their best on damp cold runs.

Feather Eating.

This habit is most frequently to be found amongst birds confined in small runs without any occupation. It may be brought about by the fowls being infested with insects, and so the first care should be directed to freeing them by dusting the birds every other day with some insect powder or flowers of sulphur. Shortness of animal food may also induce the habit, which can be remedied by a regular supply of flesh It is extremely difficult to cure, unless the birds can be given their liberty, and it is best, if there are only one or two feather eaters in the yard, to get rid of them befoae they corrupt the rest, rather than attempt to cure them. A little flowers of sulphur given in the soft food, say a dessertspoonful to a dozen birds, twice a week, frequently has a very beneficial effect. It is well also to give the birds occupation, by throwing a barrow of horse manure into their run, if such be available, or by scattering their grain amongst a bundle of straw, or amongst a heap of clean sand, so that they may find occupation in scraping it out. Tying their green feed in such a position that they have to jump a little from the ground in order to reach it is also advantageous. We have known cases in which the habit has been checked by applying some very disagreeable drug, such as bitter aloes, to the feathers of the victims, and a small gag fastened in the mouth, by tying it behind the comb, has also been used with good effect in the case of valuable birds which persisted in this habit.

Hatching and Rearing Ducks,

A large, quiet hen, with very few, if any, feathers on her legs, may be trusted with nine to eleven duck eggs. The period of incubation is 28 days. Make the nest on the ground, with a foundation of earth, and a bed of hay next the eggs. As moisture is very helpful to a successful hatch, sprinkle once a week with warm water—not the eggs, but round the nest and the nest itself while the hen is on the eggs.

The eggs may also be hatched in any good incubator if the operator be mindful that they require more moisture than hen eggs. Ducklings often chip the eggs some hours before they hatch out; do not interfere more than is absolutely necessary. Leave the ducklings under the hen for at least twelve hours; if twice as long, no harm will be done. Before placing the hen in the coop give her a good feed and drink. The chopped-up egg and bread recommended for newly-hatched chickens is equally good for ducklings: a little every two hours may be fed for the first two days, every particle not eaten should be carefully cleaned up. Water should be given from the first in a shallow pan with some sand or gravel in it. The ducklings once started grow very fast and can be treated like chickens: a little chopped-up meat or suet mixed with the soft food. or mixing the flour with strong meat, broth, or milk is very helpful to sheir growth. After a fortnight they will manage without a mother, then there will be little difficulty in rearing them, provided they are never overcrowded, that their coop is clean and well ventilated, and that they always have a clean bed of straw to sleep upon.

Answers to Correspondents.

"Fowl Cholera."—The case you mention is decidedly cholera. The same question has just been asked in the 'Australian Hen,' and they assert that there is no cure, while we say there is, and would refer you to page 5 of our Aptil numbe as the article is too long to repeat.

"K.M.," Kapunda.—The best means to get rid of tick in fowls is to make an ointment of 4oz beef suet rendered down and 1oz. kerosene. Rub well into the feathers and under the wings. Paint the perches and all woodwork with kerosene until tick are exterminated.

—MUSHROOMS.—

Mushrooms are so easily grown that anyone possessing a cellar, shed, or outhouse, with a temperature of from 48 to 55 degrees of heat, has just the convenience for their growth, and can obtain a supply all the year round. Obtain as much short manure, straw and droppings from draught or other horses fed on hard corn, etc., in about equal proportions — droppings from horses that are fed on carrots, or where horse powders are frequently given, should on no account be used, as the result would be failure—(fresh from the stable, if to be had, but that is not absolutely necessary) as will make a bed 16 to 18 inches deep, and any required size; throw the same in a heap for a week to heat, and dispel the greater part of the moisture it contains, then spread it out for a day or two to dry and cool down, after which again throw it up together for a few days — generally about five will be found sufficient It will then be fit to make the bed with, which, let the size be what it may, should not be more than 18 inches deep. When making up the beds a tenth part of nearly dry cow manure, if procurable, should be well mixed with it, as this has a tendency to keep the beds longer in bearing, and, besides, gives the Mushrooms a much thicker and firmer flesh.

In making the bed, it should be trodden or beaten down as firmly as possible, that the heat may be the more lasting, and not so liable to rise too high at first. As soon as the heat has risen and declined to 70 degrees, it is fit to spawn. Amateurs will do well to observe this, as too high a degree of heat destroys the vitality of the spawn, while a lower temperature is not sufficient to produce the vigour necessary for an abundant crop. It should be broken in pieces about the size of a walnut, and placed in the manure 2 inches deep, and about 6 to 8 inches apart every way. Then cover the surface of the bed 1½ inches with a layer of loam (if possible) or good garden soil, and make it firm, and afterwards well pat with the back of a smooth spade dipped in water, the same day the bed is spawned.

In a cellar or outhouse in which an even temperature of 55 degrees can be secured, no covering of litter or any other material will be required: but, in cases where this convenience is not at command, litter must be used to effect the desired temperature, and will keep the surface of the bed in a state of moisture.

The Mushrooms begin to appear in about 4 to 6 weeks after the bed is spawned, after the temperature above mentioned is maintained. Should the beds become very dry, they must be watered, but not saturated. The water should be lukewarm, and applied through a fine rose, and should never be given in great abundance. But Mushrooms like a moist, fixed temperature, which may be produced by occasionally syringing the walls, floors, etc., wherein the beds are made. Avoid cold draughts and chills, which often cause the embryo Mushrooms to damp off.

When gathering the crop, do not cut the Mushrooms with a knife, but take them out by the root; this may be done by a twist of the thumb and finger, afterwards filling in the space made with a little loam.—"Hackett's Manuel."

Mortlake School Experiments

The following experiments are interesting to show how correct information can be obtained:—

1. (A) Placed pulverized local rock in well-drained pot. (B) Placed pulverized local rock with some decayed organic matter (rotted weeds) in another pot. Sowed bean in each. In (A) the plant died at the end of six weeks; in (B) the plant attained maturity and produced ten well-filled pods.

Deduction.—(A) Local basaltic rock contains all plant food except organic matter. (B) Organic matter is necessary to soil in order that the soil organisms (bacteria) may assist plant.

2. Placed equal weights of sand, and of clay mixed with sand, in two tins. Same weight of water added to each, tins were exposed to air for a week. The mixed clay and sand was found to be the heavier.

Deduction.—Evaporation is greater from sand than from a mixture of sand and clay.

3 The above experiment was performed without the added water. The tins were exposed for one night, and were weighed in the morning. The mixture was heavier than the sand alone.

Deduction.—(A) Clay in soil assists its absorbing power. (B) Soils absorb moisture from air.

4. Placed bean seeds with embryo up, on side, down; seeds with embryo down appeared first above the ground; seeds with embryo on side were next.

5. Experiments with potatoes. Sets cut, some were placed with "eyes" upward, others downward. In each case those with "eyes" upward appeared above the ground from 5 to 14 days before the others.

6 In March, planted potatoes at varying depths, 3 inches, 5 inches, 8 inches, Those planted at 8 inches came up first, then those at 3 inches; many of those at 5 inches failed altogether.

The potatoes at 8 inches received benefit of dampness conserved below. A slight shower moistened surface 10 days after planting and helped the 3 inches potatoes.

7. Placed an India-rubber tube over cut-off stem of balsam. Attached a glass tube; poured small quantity of water in tube. In 36 hours, sap had arisen in tube ¾ inch. Showed effect of root pressure.

8. Stripped off all leaves from hardwood plant, in some instances death followed. Stripped off all leaves from soft-wood plant—none died.

Deduction.—Hard-wood plants depend almost entirely on leaves for breathing and digesting food. In soft-wood plants this work is also performed by the stems.

9. Cut four kerosine tins into halves, two transversely, two longitudinally; put same weight of soil in each; added to each same weight of water (stirring soil well). In Nos. 1 cut transversely and 2 cut longitudinally, the surface was stirred daily for 14 days: in the other tins the surface was not stirred. At end of time, No. 1 weighed the heaviest, No. 2 next.

Deduction.—Surface stirring breaks capillaries, and acts as a mulch, preventing evaporation. Deep cultivation tends to assist in conserving moisture.

10. Performed experiments with wheat, oats, barley, and mangolds. In every case, deep cultivation gave results, varying from 1½ to 4 times the weight of material over shallow cultivation,

11. Performed experiments with millets. Those in which the surface was stirred to a depth of 3 or 4 inches averaged 4 feet high, and those with no surface-stirring averaged 2¾ feet.

12. Experimented with fertilizers. Crops all responded to the addition of phosphates but showed no improvement with potash.

13. Cauliflowers and brocoli in July formed much larger heads when cincturing was performed than in the case of those where the operation was not performed. Cincturing was done at the time the flower was just forming.

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FIRST PRIZE, Gawler Show, September, 1906.
FIRST PRIZE, Two Wells Show, September, 1906.
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Extract from THE REGISTER :—Among an excellent lot of ponies Mr. A. Brown's St. Elmo stood out prominently by defeating two hardened prizetakers in the entire class between 13.2 and 14.1 hands

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Drainage and Irrigation.

[BY A. S. KENYON, C.E.]

Cultivation without irrigation has been stated to be preferable to irrigation without cultivation, and there is no doubt that there is a great deal of truth in the statement. In our State, careful and progressive farmers have raised larger and better quality crops than others have achieved with the same rainfall, and with the aid of irrigation water in addition. Much of the improved result was, no doubt, due to better cultivation methods ; but these improved methods also meant, to a slight extent, drainage. The American teachers tell us that irrigation and drainage, or rather drainage and irrigation, are inseparable, drainage being the more important. Our experionce, now that we have had some years of irrigation, is leading to the same conclusion. At Mildura, where irrigation on a large scale and to an extent replacing rather than supplementing the annual rainfall, was first put in operation, the early years did not teach the lesson, owing to the fact that, with other mistakes apparently unavoidable in the foundation of new occupations and industries, the varieties and classes of trees planted were not generally suitable either for the natural conditions or to give profitable returns. Seepage, of course, both black and white, early made its appearance ; trees died out in the immediately affeeted parts, and general consternation ensued. Blame was, however, imputed to the leakage from the channels only, and not to the lack of drainage. Naturally, of course, the first evidences of over-saturation of the soil occurred near the channels, while the dying off of trees in soils not giving surface indibations of seepage, was ascribed to all sorts of other causes. Now that all the early inferior trees have been got rid of, and the limits of direct seepage from the channels ascertained, much more knowledge of the effects of over-watering is available, and a considerable amount of attention is being paid to the drainage problem. Shafts have been sunk through the surface sands, loams, and clays into beds of drift, and drains of various kinds led into them. These are only partially effective, and there is evinced a decided tendency to instal complete systems of tile or agricultural pipe drains, absolutely on the lines of old-world methods. The value of full-bearing well-seleoted orchards in Mildura now reaches to over £100 per acre, so that the comparatiuely heavy initial outlay is not so severely felt.

The spectacle, however, of a country like the mallee frontage to the Murray River, at Mildura, requiring sub-soil pipe drainage is sufficiently startling, and must inevitably give much food for thought to those engaged in either carrying on or advocating irrigation in our arid areas. Mildura has, like all the mallee areas, soil ranging from almost pure sand to sandy clay, with beds comparatively near the surface of pure drift sand. The sub-soil is frequently almost pure rubbly limestone (so called)—being generally the sulphate and rarely the carbonate form of lime—while in all cases lime in its various compounds is largely present. The "water table," save in beds of lagoons or swamps—where water collects in the rainy seasons—is generally at depths of 80 feet or over. The contra is necessarily the volumes of water used in irrigating. These are large, though probably not excessive, the average addition to the perennial crops, such as fruit trees, being about 24 inches net, i.e., without allowing for water seeping from the distributary channels. Considering that there are many light showers which do not get into the sub-soil, the result of such heavy watering is equivalent to being in a zone of rainfall of about 40 inches per annum. Hence the raising of the water-table to within a few feet of the surface, injury to the growth of the trees, and the necessity for sub-soil drainage.

In the fruit-growing areas in the south pipe draining is becoming more and more the rule, whether a limited amount of irrigation is practised or whether the natural rainfall alone is relied upon. Fruit trees show more quickly than any other crop the injurious effects of a shallow "water-table." In the Goulburn Valley it will not be long ere drainage will be compulsorily resorted to by the orchardists. Already the warnings are beigg given. The evil day is being staved off by good cultivation, by "liming," and by careful and economical use of water. Even where as at Bendigo, only comparatively small additions of water are made by the irrigators, the season just past—one of rainfall much beyond the average—has shown the need for drainage, many trees having either died or received a severe set-back.

So far, these remarks have dealt wholly with fruit trees, which receive considerable attention, much cultivation, and—most important—are watered by furrows and not by flooding. The case with regard to flooding irrigation is more marked. The almost invariable practice is to water all cereal crops, lucerne, and grasses by flooding. Apart from the injurious effects of submerging to a greater or less sxtent the growing plant, ond preventing the natural processes or atmospheric action—markedly injurious under the high temperatures characteristic of our summer season—the inadequate preparation ef the land calls for the application of a great excess of water to parts in order to cause the water to reach the higher lands. Consequently the sub-soil is filled with water, and, especially where a "plough-pan" exists—as is usually the case in old cultivation ground—becomes water-logged and sour. The soil bacteria are deprived of their revivifying oxygen; their beneficial effects cease partially or wholly, and the soil becomes "adobe" or "brick." The sub soil loses largely its capacity to retain moisture in its capillary or useful state, owing to the small particles cohering to form larger ones; within ten days or so, the crop shows signs of distress, and another watering—as wasteful as the previous—is required. Small wonder need be felt when assertions are heard that the life of lucerne is not more than five years—at other times, eight years is the statement—and that at the end of such a period, replanting is necessary. The cry that "irrigation does not pay" is justified by the results achieved under such methods.

It is not, of course, claimed that drainage, and drainage alone, will prove the sovereign remedy for all ills attendant upon irrigation Far from it. Drainage is, however, a first essential, and the irrigationist employing or introducing drainage will rarely be found deficient in other respects. For orchard lands, and for like crops where the capital value of the producing land is high, there is nothing to excel the tile or agricultural pipe system. Its cost is high, as much as £6 or £7 per acre, though its general adoption should lead to the establishment of tile-making works in the locality, and consequently cheapening of the tiles. Besides, a complete system is necessary for trees and vines, it is a matter of life and death; lucerne, although a deep rooter, is rather a gross feeder, while the annuals are content with a much shallower root system. They do not need such a perfect system as the orchards. For them a system sufficient to keep the soil bacteria lively, to keep the soil particles small, and to prevent the accumulation of the soluble salts—principally soda and lime—at the surface by capillary action, should suffice. Such a result should be capable of attainment by, first, better methods of watering—the use of furrows for watering or properly graded and small checks, if flooding be adhered to; secondly, by subsoiling—breaking up of the "plough-pan"—and allowing the water into the subsoil, along with its fertilising agencies; and, thirdly, combining with the subsoiling a few open or closed drains to insure movement in the sub-soil. Such a system, on a very elaborate scale, is employed at the Werribee Sewage Farm, Melbourne, and has proved highly successful both from the financial and hygienic stand-points, in dealing with a most difficult problem—the disposal of large volumes of sewage matter, which, unless an efficient system of drainage were in vogue, would form most objectionable and useless marshes.

In our shallow soils, with sub-soils of a highly clayey nature, great care must be taken in sub-soiling not to bring much—none if possible—of the sub-soil to the surface, as the sub-soil, though chemical analysis shows it practically as rich in plant foods as the surface soil, is known by bitter experience to be useless to plants for many years. The effect of sub-soiling to a considerable depth upon the unlocking of these unavailable plant foods is a problem which, apart from the question of drainage, offers considerable allurement to the investigator, and profitable returns to the community, should it be satisfactorily solved. It may be predicted that sub-soiling, combined with proper surface cultivation and sub-surface packing, will render as much service to our farming community as the introduction of phosphatic manuring.

Experiments to determine the movements of the soil moisture in the surface and sub-soils are being carried on at the Wyuna Government Irrigation Farm in the Goulburn Valley District, Victoria. Samples of the soil at the surface, and at every 6 inches in depth down to 2 feet, are taken at frequent intervals of time, depending upon climatic conditions, to ascertain the amount of moisture present. The samples are taken from virgin land of various classes, land cultivated on ordinary methods, land subsoiled, and land irrigated, embracing as far as possible all cases of variation of soil moisture movements due to man's interference. These investigations are, as yet, in their initial stages only; but they promise to yield much of interest.

Reference has been made above to American ideas as to the relative importance of drainage and irrigation. An authoritative Indian Commission on the effects and causes of alkali in the Aligarh district of Northern India reported in effect that the introduction of irrigation increased the alkali areas, both by seepage from the channels, and by excessive use of water in irrigating, and that where the removal of such excess waters was mainly due to evaporation, the result was a destructive accumulation of alkali. The remedy proposed by the Commission was subsoil drainage. Apart from the injury to the productive power of the soil, much ill effect on the health of the residents has been caused throughout the irrigation districts of India. "The high fever death rate is largely due to the stagnating water in the soil." Mr. D. H. Anderson, editor of the "Irrigation Age," Chicago, says:—"The constant pouring of water upon the soil in many of the older irrigated districts has resulted in creating a water table near the surface; so near, in fact, that formerly fertile tracts of land have been converted into swamps. Hence, drainage has become a problem necessary to be solved if fertile lands and profitable orchards are to be saved from destruction, and it is gradually dawning upon the minds of irrigators that where there is a system of sub-irrigation there is also a system of drainage ready to hand. . . . According to the common understanding, drainage means carrying off an excess of water from swamps and cold, over-moist soils for the purpose of reclaiming them or converting then into fertile fields. But since irrigation plays so important a part in farm economy and profitable plant culture; indeed, since it has become an absolutely essential element of success in the arid and sub-humid regions of the United States, and is gaining ground in the humid regions, it has been discovered, through costly experience, that drainage and irrigation are inseparable systems."

One further factor in the problem remains to be considered. Our older schemes of irrigation were almost wholly designed upon the principle of carrying water to the land along the ridges or high ground, and above the level of the land to be watered—in fill, to use the technical term. No, or but little, provision was made for drainage of surplus waters, the channels, as constructed, being manifestly unfitted for sush use. Neither is there legislative provision whereby an irrigator can obtain an outlet for his drainage system through the land of another owner. In the reticulation of the Wyuna Settlement, an area of about 20,000 acres—the latest system of distributary channelling carried out in Victoria—ample provision has been made for drainage channels in the low-lying ground to carry off the surplus waters, though not providing for each individual irrigator's requirements. The need for the construction of collective drainage works and for legislation for the individual's needs will not, however, arise until such improved methods of irrigation have been adopted with such consequent great improvement in profits that the cost will not prove so great a burden as it at present appears.

The experience of all other irrigating countries warns us that it is essential to drain to achieve the best results. In laying out the farm, as well as the great State schemes, this fact should be borne in mind, and ample provision made. The result will be less water required for irrigation, and much greater profits. Already we know that as great profits can be achieved here, as in any other country; that areas supporting a few sheep can be made to support as many, nay, more, men; and that living can, in our once arid, inhospitable regions, be made a joy instead of a punishment; but this can only be done by the use of much labour, and of the best methods of irrigation, of which drainage is not the least important.

PICOTEE.

STRAWBERRIES.

Seed Potato House.

(By George Seymour.)

In an article on "The Care and Preparation of Seed Potatoes," which appeared in the Victorian 'Journal of Agriculture' for November, 1905, it was stated that the best way to keep potatoes intended for seed was, in the absence of cool storage, to spread them out on a piece of firm dry ground under the shelter of pine or other evergreen trees. As such a spot is not always available, the necessity for a suitable place prompts me to again refer to the matter and endeavour to furnish growers with a satisfactory solution of the difficulty. On most farms the tubers intended for seed are kept in pits. This may do very well for hardy sorts and late manuring varieties, but it is decidedly injurious to the early ones. I am satisfied more injury is done to the yield of the crops by the improper way in which seed tubers are kept than by any any other single cause, and that more benefit will be derived from a proper method of keeping the seed than from a change of seed which has in many cases proved disappointing. I feel sure it would pay every grower to erect a structure, however rough, to keep his seed in. The result would be a more even crop, with stronger and more vigorous plants, which play an important part in the yield of a crop. The chief requirement is a cool dry place where the tubers can be exposed to the light as much as possible: the space should be sufficient to spread them out thinly, the thinner the better. The only thing to guard against is frost, and if this be avoided when they are first spread out, there will be little danger, as they will soon become green. Tubers kept in this way do not bud so quickly as when piled together in a heap, and, when the buds do start, the growth is very slow: the shoot will be strong, and of a green colour. If seed for early crops is kept in this way, allowed to sprout, and planted when the ground is warm, better results will be obtained than at present. The practice is to plant in the middle of winter, when the soil temperature is low, with the result that the plant has to struggle against adverse conditions. For the potato plant to flourish, a temperature of over 60 degrees is required. In support of this I may mention a parcel of Early Rose and Carman No 1 seed planted in my own field. The seed was dug in early in April, spread out all winter on the barn floor, cut mostly to a single eye, and planted on the 6th December. They were above ground in ten days, and before the 6th January many of the plants were in bloom. By the end of the first week in February, or under ten weeks after planting, there was a crop of tubers large enough to lift, but, of course, too green to handle

Instances have come under my notice this season where crops of early potatoes have failed or missed badly Had the seed been kept under proper conditions, this would not have occurred.

Rabbit Destruction.

According to the "Sydney Morning Herald," Mr. W. M. Robertson, manager of "Rochdale," Old Junee, reports a simple method of rabbit destruction as follows:—A piece of bagging or a small bough is saturated with ordinary coal tar, and placed at the entrance to the burrow, which is then closed up. The result is surprising, for the rabbits shun burrows so treated. A kerosine tin of tar, costing about one shilling, is sufficient to treat 300 acres of infested country. Experiments conducted by Mr. Robertson and a neighbor have been entirely successful, and a landholder in the Murrumburrah district, whose land is wire-netted, was successful in entirely freeing his land from rabbits.

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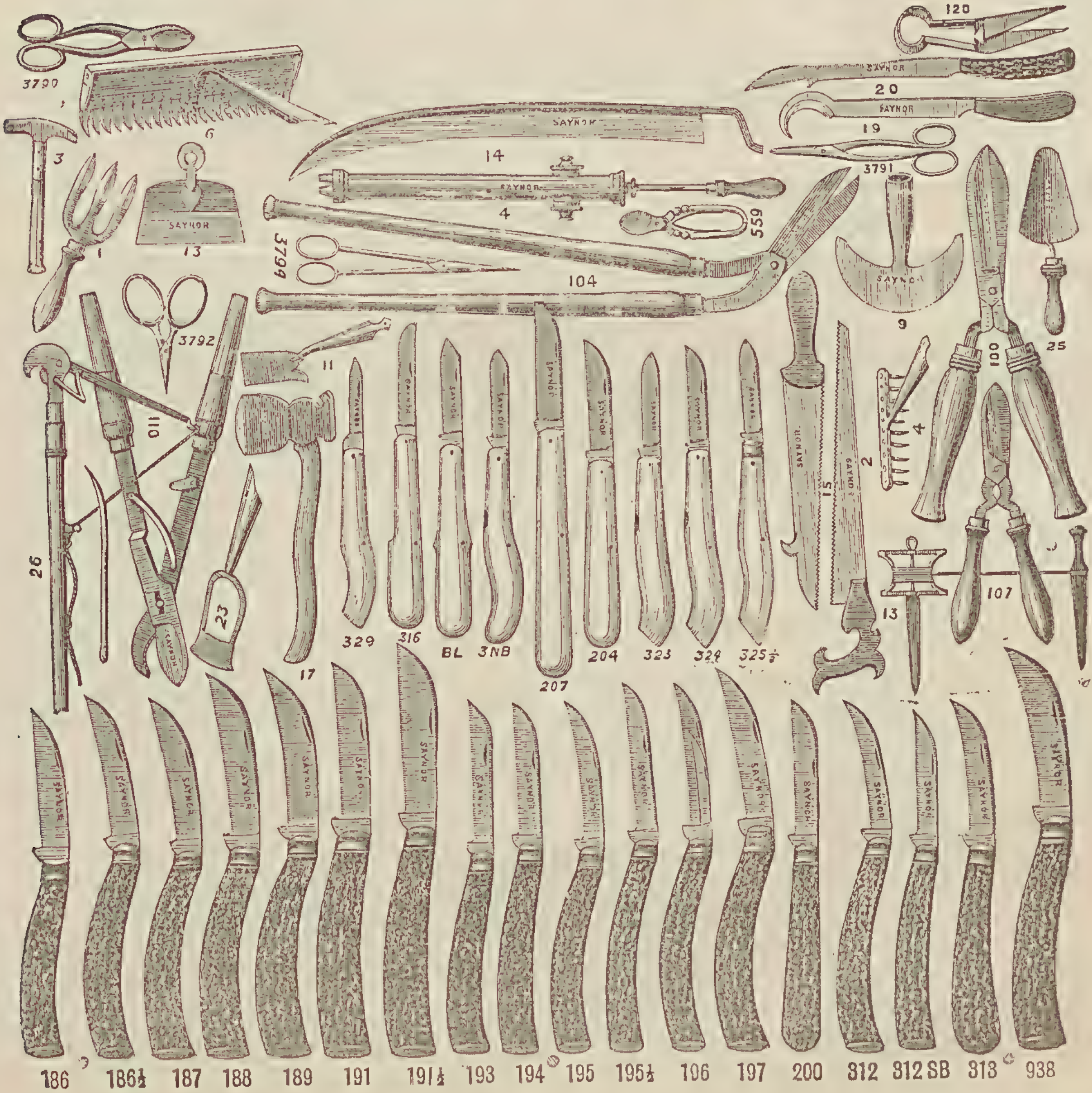

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How to "Boil" Eggs.

It is a thing not generally known that the best way to cook what is ordinarily known as a boiled egg is not to boil it at all, but simply allow it to stand, for five minutes or thereabouts, in a saucepan on the hearth. The size of the saucepan must be in proportion to the number of eggs which are to be cooked, about half a pint for each egg being the quantity. The saucepan is allowed to stand near the fire, on the hearth but not on the hob, for five minutes, or perhaps a little more if there be an extra egg to be cooked. It will then be seen that the eggs are evenly cooked throughout to a creamy consistency, and are far more easy of digestion and pleasant to the palate than an egg boiled in the ordinary way. The same result may be produced by putting the eggs in a basin and pouring boiling water over them, and afterwards covering with a plate, but they will, in this case require to be left a little longer in the water. The vessel should in either case be filled with water, and an experiment or two as to the amount of cooking required may be necessary in order to suit different palates. Eggs cooked in this way are far more suitable for invalids than the ordinary domestic boiled egg.

Cheap Canning Outfit.

The canning of fruit has now become a recognised and profitable industry in most fruit-growing countries, and of late years the tendency has been to greatly simplify and cheapen the process.

Bulletin 81 of the Louisiana Experiment Station describes one such simple process, for which the cost of outfit is only about £2, having a capacity of 300 2-lb. cans and 200 3-lb. cans per day.

The details observed in the canning of tomatoes with this outfit are thus stated by the station :—

In canning tomatoes, the first step is to scald the fruit just sufficiently to loosen the skin, so that it can be slipped off. To do this, we use a large iron kettle, commonly called a "wash-pot." The tomatoes are placed in a cheap tin vessel, holding about 1-3 bushel, that has been punched full of small holes, and dipped into the boiling water and allowed to remain about one minute, or until the skin will slip readily. The fruit is then peeled, sliced, and filled directly into the empty cans. The cans must be well filled for good results. This finishes the first step. The filled cans are then passed to the second stage of operation. The tops of the cans wiped dry with a clean cloth, the cap placed on and soldered around the rim, the small hole or vent in the centre of the cap being left open. Then we are ready for the third step, that of exhausting—expelling the air from the cans This is accomplished by submerging the can in the boiling water (in the boiler) about one-third of their length, They are held there until they come to a boil, or, for tomatoes, ten minutes. They are then removed, the small hole in the centre of the top is closed with solder and the cans are then completely submerged in the boiling water and boiled, or processed, twenty minutes, which is the fourth and last step in the operation.

The following vegetables and fruits can be successfully canned in somewhat similar manner :—French beans, asparagus, cauliflowers, strawberries, blackberries, raspberries, peaches, pears, plums, cherries, apples, figs, etc. Corn and peas cannot be successfully preserved by this method, unless the cans are processed for the three and a-half to four hours. But even then there will be many losses from swelled and spoiled cans.—"Cyprus Journal."

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Streaks in Butter.

Streaks in butter, according to the New York Agricultural Experimental Station authorities, are due to the presence of butter-milk after the salt has been added, and not to the ancient notion, the imperfect working of salt in the butter. The fact that when butter was not salted there were no mottles has promoted an erroneous conclusion. Still, it is true that when butter is not salted there will never be any streaks in that butter, even if there is an excess of butter-milk present in the butter after being washed; but should salt be added to the butter while it is in that condition there will surely be streaks, and no amount of extra working will take those streaks out. If the butter-milk is all washed out of the butter, and any amount of salt is added afterwaeds, and not worked in evenly, there will not be any streaks. This goes to show that salt is not the direct cause of mottles in butter, although it has an indirect effect in producing them.

Cabbage for Dairy Cows.

Mr. P. J. Carroll, one of the Victorian dairy experts, favors cabbages as a fodder for milking herds. On a farm at Noorat (he states) enough cabbages were grown on a plot of ground 50 x 32 yards in area to keep 140 cows going for ten days. He points out that on this basis an acre would furnish fodder for thirty days for the same herd, or four acres would serve for four months. The actual yield per acre on this particular farm was just over forty tons. This was from land which, previous to ploughing, had been thoroughly cultivated and treated with a dressing of farmyard manure. The grower had been feeding cabbages to his cows for a number of years, with very satisfactory results. The cattle like them, and there appears to be no injury to the milk. Particularly in the cooler districts the cabbage could come in to fill in the blank in the green food supply of the farm between the time when the last spring growth is exhausted and the first summer crops are fit to use.

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July Number of 1907

The Australian Gardener.

EARLY LONDON CAULIFLOWER.

The Garden.

Vegetables.

Soil should be prepared for the various crops that will be needed to supply the requirements of the cultivator during the spring and summer. In limited areas the cultivation of various vegetables that require to be used when freshly gathered should be specially aimed at. Most kinds require a cool, rich, well-drained soil to attain excellence, and while many will succeed in light, sandy loams, others are produced in fine condition with little difficulty in soils of opposite character. In light warm soils cabbage, cauliflower, early potatoes, and onions are grown in quantity; in stiff clays, the best celery in the metropolitan district is produced; while soils of a loamy nature produce a large proportion of the peas sold in the market early. Large quantities of manure are applied regularly in all classes of soil, due regard being paid to proper rotation.

Artichoke, Globe.—Suckers or rooted plants may be planted out dusing the month, but this work is likely to prove most successful if it be postponed until the early spring. Plant at least 3 ft. apart; 5 or 5 ft. would be, perhaps, bettor. This vegetable is hardly worth the growing, but as some people like it a plant or two might be tried.

Artichoke, Jerusalem.—This species of sunflower is quite another thing to the Globe Artichoke, and is a very desirable vegetable to grow. When the tubers, which are somewhat like potatoes, are in proper condition, the leaves and stems wither away and die down. The tubers may be lifted and stored, or allowed to remain in the ground, to be taken up as needed. They do not store very well, and are liable to decay. Keep enough tubers in the soil for next season's planting out in the spring. In some places the yield of this plant is sometimes enormous.

Broad Beans.—Early plants should by this time be bearing pods large enough for use. Sow a row or two, according to requirements, at any time during the month. Gather the pods before the beans become over-large.

CHINESE CABBAGE.

Cabbage.—Plant out a small batch of strong seedlings, and sow a little seed in order to keep up a supply of young cabbages. A very little seed need be sown. Vast quantities of seed is wasted and seedlings raised in huge numbers at a time, but most of them are never made use of.

POINTED-HEADED CABBAGE.

Endive.—A useful winter substitute for lettuce. Sow a little seed. Plant out strong seedlings.

Carrot.—Sow a little seed occasionally. Thin out seedlings well, and never allow carrots to become overcrowded or to be spoiled by weeds

Leek.—Sow a little seed in seed-bed, and transplant to shallow trenches when large enough—say when the stems are half as thick as one's finger; or when they are as one's thumb they may still be planted. The soil should be made very rich for the leek, which vegetable will need a good deal of moisture to enable it to grow to perfection. When nearly full grown the stems may be earthed up, in order to make them white and tender.

NEW YORK LETTUCE.

Lettuce.—Transplant young seedlings that seem large enough to stand the moving. Take up with a trowel after they have been treated to a goed soaking with water, unless the ground may be sufficiently moist already. The less the roots are broken the better the young lettuces will grow.

Cress and Mustard.—Sow a little seed now and then during the month. These salad vegetables can be kept going all through the year without much trouble.

Onions may be planted out from early sowings. The soil should be thoroughly worked, and brought to a condition of fine tilth before planting. Unless the soil was heavily manured for a previous crop the addition of manure is necessary. Onions need constant and perfect surfaec cultivation during the growing period.

Seeds may be sown for later transplant in or for salading.

EXTRA EARLY WHITE NOCERA ONION.

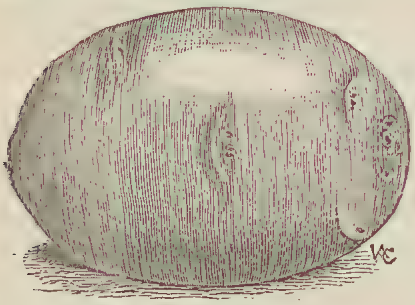
Parsnip.—If a large supply of this vegetable be required, seed may be sown to any desired extent.

Peas.—As this is one of the best vegetables any one could grow, an endeavour to keep a supply going should be made. Plants well grown should be producing abundance of peas. The pods should be gathered whilst they are young and the peas tender and eatable. Do not allow any peas to ripen, and the plants will continue to produce. Try several varieties Sow as freely as you like.

Radish —Keep a supply going by sowing a few seeds two or three times during the month. A very little seed is likely to to suffice. Manure well with rotted dung. Cowdung will most likely prove to be the most satisfactory. Use the radishes whilst they are quite small and tender.

Herbs.—In warm localities all sorts of herbs may be planted or old plants can be taken up, divided, and replanted.

Successional crops of peas, lettuce, etc., may be sown. Some fine specimens of a new rhubarb were shown at the Victorian autumn horticultural exhibitions. It is named 'Stone's Ever-bearing Ruby,' and is a locally-raised variety. The stems are of good color, large but not coarse, and are freely produced during winter and summer.



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The Flower Garden.

NEW SEMI-DWARF DELPHINIUM.

Make early sowings of Half-Hardy or Tender Annuals on heat. Plant Gladioli, Delphiniums, and Chrysanthemums

Manuring and digging beds and borders, pruning and planting deciduous trees and shrubs may be performed at this season. The greater part of the small prunings of shrubs and herbaceous plants, and all leaves should be dug into the beds if room for the purpose is available. If this cannot be done without damaging roots of plants growing in the beds the prunings, etc., may be heaped and mixed with soil and manure to decay and be worked into the soil later.

Where bulbs such as narcissi, tulips, etc., are grown in special beds, the surface should be lightly worked and cleaned to obviate the necessity of such cleaning later in the season, when the foliage will be much more extensive, and the work will be difficult to perform without damaging the leaves of the plants. It should be remembered that the leaves of a plant perform functions similar to those performed by the skin, lungs, and stomach of an animal, and that their destruction or even injury must have a detrimental effect on the plant. When the leaves are ripening and falling their work is done, but young growing foliage should generally be carefully nurtured.

Roses may be pruned this month. Where cuttings are required for propagation they may be taken without entirely pruning the plants. In deep sandy soil rose plants often produce very strong shoots early in the season that fail to ripen and often die back in winter. This should be prevented in a measure if the soil was rammed hard before planting the rose. Any manure used when planting should be fairly rotted, and worked into the soil below and around the site intended for the plant, but should not be brought into contact with roots.

Rose-growers are usually anxious to know the probable value of the new varieties that are distributed each season by the nursery trade. Several of the new kinds offered this season are very promising, including Mrs Myles Kennedy, silvery white, flushed and edged with pink; William Shean, pink, a very promising variety; Mrs Peter Blair, deep yellow, may not be large enough for exhibition, but a good rose for the garden; Madame Constant Soupert, yellow, shaded peach; Mrs G. W. Kershaw, pink, resembling Belle Siebrecht; Lady Rossmore, reddish crimson; Warrior, deep red, a decorative rose resembling Papa Gontier, but much darker in color; and Lena, also a decorative variety, producing long buds of a bright apricot color.

Chrysanthemums should be removed from the beds where they were grown to produce large blooms, and should be replanted in an open position in unmanured soil. The sucker growths may be infested with aphis and should be cleaned before being replanted. The easiest and most effective method is to divide the stool or crown and dip the divisions in a strong nicotine solution.

As Dahlias die down the tubers may be lifted and stored in a cool dry place, free from draught. Where Dahlias are ripening their seeds and the weather is continuously moist, damping of the seed heads is likely. It is well to remove any that are at all ripe, and to clean the seeds and dry them before a fire, otherwise the whole may be lost.

Carnations should be tied to stakes. The winter blooming kinds should now be showing flowering growths freely, and will be benefited by a light application of blood manure or other rapid acting fertiliser. Disbudding is necessary if fine blooms are desired.

The Canna.

(By J. Cronin).

GLADIOLUS-FLOWERED CANNA.

Canna, the Indian Shot plant, is a family of herbaceous perennials, found native in Brazil and other parts of South America, and in Eastern Asia. Some of the species have been cultivated in English and European gardens as stove plants for a considerable time, C. Indica and C. orientalis flowering in England in 1570. About 1820 a number of species was introduced from Brazil and other parts of South America, but for some time little progress was made towards improving the canna as a florist's flower. Some of the species were stately foliage plants, but the flowers were small. Of late, florists (in France and Italy especially) have paid special attention to the canna, and have effected a wonderful change in the size and color of the flowers. The hybrid varieties now produce spikes or bunches of beautiful flowers, a most decided contrast to the insignificant inflorescence of most of the species. The foliage in many kinds is large, and varying in color from purplish red to bright green. There are, among the later introductions, two types, known as the "orchid-flowering" and the "gladioli-flowering" Cannas, that surpass, and are generally grown to the exclusion of other garden forms. The orchid-flowering varieties are taller in growth, and produce larger individual blooms than the gladioliflora type, but are more tender and easily affected by hot winds. They are specially suitable for pot culture, for greenhouse or verandah decoration. Some of the finest varieties bear highly-colored foliage, and are conspicuous plants in the garden, and worth cultivating for that alone. The gladioli-flowering type is of a much dwarfer habit of growth, and generally hardier. The flowers are more freely produced, and though smaller individually, are borne in larger trusses. This type of canna is undoubtedly one of the finest classes of plants grown for border decoration, praducing bright flowers freely during the greater part of summer and autumn. In gardens in most parts of the State it thrives and blooms well, often under most unfavorable conditions. Canna blooms are not often used as cut flowers, the florets dropping too quickly, but last well on the plants, and after a hot wind has spoiled the blooms that are open, a fresh supply is produced in two or three days.

Soil—Situation—Culture.

A cool friable loam is the most suitable soil for cannas, although the plants will thrive fairly in almost any kind of soil if well supplied with manure and water. They are often grown in special beds that are protected by a fence or hedge from heavy winds but exposed to full sunshine, and in such positions, when well manured and watered, bloom freely for months. To get best results the soil should be deeply warked and well manured, half-rotted stable manure and bone dust being suitable fertilisers.

Cannas are specially suitable for planting in bold groups, or as specimens on lawns, in the mixed border, among rockwork, at edges of ponds, etc. Wind-swept and overshaded positions are unsuitable.

The plants are propagated by dividing the roots or rhizomes. A small piece of root, bearing two or three eyes or buds, is sufficient to produce a large plant during the season, if well provided with nourishment. The best and strongest eyes are produced at the extremities of the rhizome. The plants may be divided in August or September, and the divisions planted into their flowering quarters immediately, or they may be potted to plant out later. Where the plants must be grown continuously in one plot of ground, the best plan to adopt is to lift the plants after they are cut down by frost in winter, and plant them temporarily in some other place—under trees or any corner will suffice—but they must not be allowed to become dry and wilted. New soil and manure can then be deeply worked into the bed, and divisions of the plant set out in spring. Pieces of root should be planted about two inches beneath the surface. Subsequent cultivation is, principally, supplying and maintaining moisture in the soil Where water is scarce, a heavy mulch of stable manure should be applied early in the season, and the plants liberally watered during hot dry weather. Stems that have flowered should be regularly cut away.

Varieties Worthy of Culture.

Orchid-flowering (mostly of tall habit of growth):—Italia, Austria, Alemannia, Africa, America, Bavaria, H. Wendland, Pandora, Suevia, Cuba, Heinrich Seidel, Mont Blanc.

Gladioli-flowering and other types:—Florence Vaughan, Madame Crozy, Papa, Paul Lorenz, Edouard Andre, Alice Guilfoyle, Queen (Konigin) Charlotte, Emilie Lorenz, Souvenir de Antoine Crozy, Souvenir de President Carnot, L. E. Bally, Doyen Jean Libaud.

The Nerine.

(By J. Cronin).

Nerine is a genus of deciduous bulbous plants indigenous to South Africa that bloom during the autumn months, producing umbels of beautiful flowers that are borne on long stiff stems in most of the species and their varieties. This genus was formerly included in Amaryllis and the species described in the early botanical works were known under that name Lycoris aurea aed radiata, natives of China and Japan, were formerly classed as Nerines, which they closely resemble in flower and habit of growth. For gardening purposes they may be still known as Nerines and are considered as synonymous by some authorities.

Nerines are undoubtedly a most beautiful class of bulbous plants, and being hardy in most parts of this State should be much more largely grown than they are at present. They will thrive under practically the same conditions as Amaryllis belladonna, a plant that is found to grow well in most districts. Either as pot plants or to grow in the garden they are worthy of a place in any garden. The bulbs are deciduous and require no water during summer, a fact that makes them specially suitable subjects in localities where the supply of water for gardening purposes is limited. The range of color in the flowers is fairly wide, comprising

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most brilliant shades of scarlet, rose, pink, and white, and, including Lycoris, golden yellow. Many fine kinds are included in some of the catalogues, a large number of them being very beautiful and unknown to the majority of gardeners and amateurs.

SOIL—SITUATION—CULTURE.

The most suitable soil is a warm sandy loam, but the plants will grow well in most soils if thoroughly drained. If the soil is poor the plants will benefit by the addition of some well-rotted manure, worked into the soil some distance below the surface; the addition of lime, rubbish, sand, or charcoal, is of benefit if the soil is of a heavy retentive nature. When preparing a site for the bulbs care should be taken to select a place where they may grow undisturbed for several years and where there will be no need to apply water during summer to other plants—during summer the plants are at rest and water in quantity is injurious to them. They flower freely when the bulbs are growing thickly together. The situation is of more importance than the soil as although the plants may exist in damp and shady positions for years they will not produce flowers. The most exposed and warmest position in the garden is the most suitable.

Planting should be done during summer when the plants are at rest; at that time they may be procured from seedsmen and nurserymen. The soil should be trodden and thoroughly settled before planting the bulbs, to obviate settling afterwards, for one of the conditions of successful culture is that they must not be buried deeply. The neck of the bulb should be placed at about the settled level of the surface; if planted in clumps place the bulbs about 3 inches apart to allow for increase, which is effected by off-sets from the original bulbs. Care must be taken when cultivating that no implement is allowed to damage the bulbs, which must be freed from weeds, etc., by hand picking.

The Orchard.

Kerosene and Fruit Fly.

The appearance of the Mediterranean fruit fly in South Australia has caused much alarm amongst the orchardists, who will be particularly interested to read that satisfactory trials have been made in Melbourne to demonstrate the value of kerosene as a cure for the pest. Mr C. French (Government Entomologist) set a number of shallow tins containing kerosene among the branches of fruit trees in orchards around Melbourne where the fly was known to exist, and the results were carefully watched. Oil has attraction for flies as well as a fatal effect upon them, and they were drawn to the tins in large numbers. So satisfied is Mr French regarding the utility of this method of destruction that he has arranged to have a large supply of suitable vessels made for distribution among the orchards at a cheap price in the coming spring season, when the fly commences to operate among the trees. The vessels, which will be of zinc, will cost 34s. per gross. In his monthly report to the Minister Mr French says:—"I think the use of kerosene is going to be our partial salvation as far as the Mediterranean fruit fly is concerned, as some of my inspectors who have tested it for themselves are well satisfied with the results."

Notes for July.

The pruning of all kinds of deciduous fruit trees should be completed during the month. All prunings should be gathered and burnt, and the tree should then receive a thorough spraying with the lime, sulphur, and salt wash, which is the best all-round winter spray, acting both as an insecticide and a fungicide. After pruning and spraying, the orchard should be well ploughed, so as to bury all weeds and trash that may have accumulated, to sweeten the soil, and to break up any pan that may have been formed by summer cultivation.

Citrus trees, from which the fruit has been gathered, should be pruned now, the pruning to consist of cutting out all dead branches or branches having borers in them, as well as all branches, thorns, or twigs, growing in the centre of the tree, which are not required. The centre of the tree must be kept well opened up, as, unless this is done, the superfluous wood only forms a harbor for all kinds of insect and fungus pests, and, in addition to this, where the tree is not well pruned out in the centre, it is impossible to do good work with the spray pump.

As already stated, all the prunings from the tree should be gathered and burnt, as this is the surest way of destroying any scale insects, borers, or fungus pests with which they may be infected. If you have no spray pump, then the above mixture should be applied with a brush. It will destroy all scale insects with which it comes in contact, and will remove all moss and lichen as well as stop the spread of canker or bark rot.

The planting of deciduous trees can be continued throughout the month, but it is not advisable to delay it more than can be helped, as when the trees are planted, even though they make no leaf or head growth, they begin to throw out adventitious rootlets which are ready to start work as soon as the first top growth takes place. Don't plant too deep; the depth at which the young trees stood in the nursery is the right depth; trim the roots carefully, so as to remove all bruised portions; spread the roots out well, so that they may get a good hold of the ground, and always spread a little fine top soil round them, as this will be conducive to the rapid formation of new roots.

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Cut back hard at planting, and don't be afraid that you will spoil your tree by doing so Failure to cut hard back prevents the formation of a strong, well-grown symmetrical tree, and always tends to injure the future vigour and growth of the tree.

See that all trees that are planted whether deciduous or evergreen, are free from pests, as it is much easier to keep disease out of the orchard by planting clean trees than it is to stamp out disease once it has got a fair hold. Where the trees are infested with scale insects of any kind, they should be treated by hydrocyanic gas. If this treatment of the young trees is carefully carried out, there is every chance of their remaining clean for a considerable time after they are planted.

Do not plant rubbish: only plant those trees that your soil and climate are adapted for Do not try to grow fruits that will only end in failure, as no grower who is dependent on fruit culture for his living can afford to grow fruits that can be produced both better and cheaper by others under more suitable conditions; but he must confine his energies to the cultivation of those fruits that prove a commercial success.

It costs just as much to prepare the land for and to plant, prune, spray, manure, cyanide, and generally look after an inferior variety of fruit tree, or a variety of fruit tree that is unsuitable to the climate, and from which no return of value can ever be obtained, as it does to grow a variety that is suitable to the soil and climate, that will produce superior fruit, and for which there is always a ready sale.

Fruit Stores.

A cool store room enables the orchardist to keep fruit far into the winter and thereby supply the local and Inter-State markets when as a rule prices are extremely good. It will scarcely pay to build a fruit store where the orchard is small or say less than five hundred bushels could be relied on each year.

The only fruits likely to pay for special storage are apples and pears. Late ripening fruit of firm texture and perfectly sound, especially about the eye and stalk, are the only kinds which should be selected for storing. The cooler and more regular the climate in which fruit is grown the better it will keep. Soil and the degree of exposure given to fruit during its various stages of growth have also a great deal to do with its keeping qualities No fruit rooms should be thought of in the hottest parts unless supplied with a refrigerating plant.

The ordinary requirements of a fruit room are that it should be proportionately long and narrow; have wide doors at each end and a high pitched roof; these features securing ample ventilation and an even temperature. Means should exist for admitting daylight to every part; but the light must be excluded when fruit is stored Double walls secure the lowest natural temperature obtainable The roofing should be as thick as possible and the eaves broad. Thatch or bark makes the coolest outer covering of the roof.

The building should where possible be placed on a well raised and solid platform so as to secure perfect drainage. The chamber floor should be composed of clean clay and sand, tamped hard and well graded, or laid over with concrete. Tar nor any other odorous material should never be used on the floor or any there part of the building. No paint is needed inside, fruit being highly susceptible and easily tainted where tar paint or vegetable odours abound. The materials for building will always depend on the natural resources of the district; and the means and tastes of the owner.

A high narrow barn-like building, with deep verandah sheds on three or all sides proves sufficiently cool for a store in late districts. Hot winds and direct sunlight from the north and west should be excluded by trees, or by selecting a site open only to the cool east and south.

Where fruit is to be stored for market it requires to be carefully selected, graded and cased so as to avoid the expense of further handling. This means that few or no fixtures are necessary in the commercial fruit store.

The choice and control of temperatures for various fruits and during different seasons can be decided only by experience. Certain it is that no one natural temperature will serve for all fruits or seasons, all depending on the water content; the degree of ripeness; humidity of the atmosphere; its temperature without the chamber; and the degree and quality of the light available.

Ripe fruit demands the lowest temperature and cleanest surrounding air, very little if any light and a comparatively dry atmosphere. On the other hand, if green or undeveloped fruit is placed in a very low temperature it stagnates and so fails to develop into a marketable condition. Further, where fruit is decidedly watery the air should be fairly dry and frequently changed: but, if the fruit is close and hard and also on the green side, the house should be damp enough to prevent the escape of the natural moisture of the fruit, otherwise it will waste and shrivel.

A strong fruity and gas-like odour is a certain sign that the chamber needs ventilating. The cool period of the day is the best time at which to ventilate. Very dry rooms need a bucket or two of water standing on the floor to exhale moisture; very damp rooms need frequent ventilating and the burning of sulphur

Where a chamber fails to preserve well selected fruit we may infer that there is something wrong in its construction, or, that the method of stacking and ventilating has not been well observed.

To Get Rid of Rats.—A farmer, writing to "The Florida Agriculturist," says that he rids his farm of rats in the following manner:—"On a number of pieces of shingle I put out about a teaspoonful of molasses, and on that I put a small quantity of concentrated lye, and then put the old shingles around under the cribs. The next morning I found some forty dead rats, and the rest left for parts unknown. I have learned several farms have been rid of the pests in the same way, and never knew it to fail." We hope some of our readers will try it and report.

Locksmith. Etc.

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Poultry Yard.

Orpingtons

At the recent show of the South Australian Poultry and Kennel Club, held in the Exhibition Building, Orpingtons carried off the principal honors. A few particulars with reference to this variety may be interesting to our readers.

They are a valuable introduction to the poultry yard. The blacks have been manufactured from Black Plymouth Rock pullets, Langshans, and Black Hamburghs, and avowedly bred for utility chiefly. There is a single-combed and a rose combed variety; the former has become the more popular, and in England has a club with many supporters that rigorously excludes any but single-combed breeders. The first Orpingtons were black, with a rich green lustre; pure white ones soon followed. This color did not please as well as the black, but they are now being bred in large numbers. Then, as the result of the buff mania, the Buff Orpingtons were produced, followed by a red speckled fowl, christened the Jubilee. The Orpington, while very large, should be compact, cobby, and shapely; neat in head, with a dark-colored eye; the legs should be short and placed wide apart, and quite free from feathers. The breast should be very full and ample, the back short, with an upward curve to head and tail, without any Cochiny cushion, or, indeed, Cochiny fluff about the bird. The legs of the Black are black, of the other varieties white in color. All the Orpingtons lay very freely a large dark yellow egg. The hens are good sitters and mothers. Apart from the black legs, the table quality is good. This objection is overcome in the Buffs, which have the desired white leg; and, as they fatten well, they may be considered a valuable table fowl.

The Buff Orpington has attained a popularity far out-rivalling the Black. It may be said to be a much improved Lincolnshire Buff, an old hardy breed very common in Lincolnshire, which was largely called upon in the production of the Buff Orpington The color now is much improved, being more uniform and less patchy. Evenness and softness of color and soundness of color in the fluff of the feathers and wings and tail, are more looked for than any other precise shade of buff. In shape the Buffs are still inferior to the Blacks, and in both there is yet a tendency for minute feathers to appear in the legs and toes, which are considered fatal defects. The Buffs are good winter layers, and in spite of being frequently broody as the season advances must rank as a thoroughly good all-round breed.

Rearing Chickens.

By M. Fern.

The Natural Plan.

In the rearing of chickens, as in the case of the hatching, there is the natural plan—i.e., with the hen—and the artificial method with the foster-mother or brooder.

I think there is little doubt amongst poultry-raisers that the hen is the best method of brooding chicks, and where it is possible, even with chicks hatched by incubators, the best results will always be obtained by allowing the chick to run with the hen.

After Hatching.

After hatching, if a number of hens have been set together, or if an incubator has been used, the chicks when thoroughly dry should be sorted amongst the best of the hens. Always use hens that have brought out the largest batch, as it is a sure sign of their being strong and possessing any amount of vitality. Each hen according to size can be given from fifteen to twenty chickens. The mothers may be confined for the first week or two in boxes with slatted fronts, to enable the youngsters to have a free run If a number of hens are being used, they can be placed in their boxes in rows, allowing the chickens to mix. If the chicks are of different colors, it is a good plan to mix them under each hen, otherwise, if a hen is given chicks all of one color and another stray one of a different color from a neighboring box should by chance get into the wrong box, the mother may kill it. This is not likely to occur if she has several of different colors.

Placing the Coop.

The coop should, if possible, be placed on a grass run, as grass is one of the most necessary foods in the rearing of chicks. It should be sheltered from the sun and bad weather. I prefer wooden floors, slightly raised above the ground. The coops should be moved on to new ground regularly every few days.

Marking Chicks.

If the breeder is breeding on careful lines, and desires to know the pedigree and particulars of strains, etc., the chicks should be marked on leaving the incubator or nest. This should be done by punching a hole in the web of the foot. Several punches can be obtained for this purpose at any poultry supply house As there are two webs on each foot, it is possible to get sixteen distinct markings, and if particulars are recorded, no matter how the chicks get mixed up under hens, particulars of their breeding can always be ascertained by the punch marks.

Sickly or Deformed Chicks.

All deformed or weak-looking chicks should be killed at sight; there is no economy in attempting to rear them, and they are only taking up the time and room of healthy birds. It is the puny chick that always brings trouble and disease amongst the flock.

Feeding the Chicks.

As a general rule, chicks should not be fed for twenty-four or thirty-six hours after hatching. They can safely be kept for even a longer period than that without food or water; in fact, at that age they can be safely sent, if secured in a comfortable box, to distant parts of the State without feeding.

As to feeding, there are as many systems as there are breeds, and every breeder swears by his own system. I think it does not matter so much about any particular system so long as some system is used. A great mistake is made by beginners in chopping and changing their methods of feeding at the bidding of every passer-by. When you get on to a good system, stick to it. Personally, I am a great believer in the dry system of feeding. This applies to both brooder chicks and those running with the hen. In this method all foods are given in a dry state, and all sloppy or moist foods are avoided, the idea being to let the chicks do the mixing. By this method the food can be scattered in the litter, and the little birds can pick up the crushed grain, getting by this means plenty of exercise while scratching for their food. A simple plan, if a small lot are being raised, is to purchase a prepared chick food, put up by a reputable dealer, or a very good mixture can be made at home of the following :—

6 lb cracked wheat,
2 lb fine-cracked corn,
1 lb rolled oats,
1 lb millet seed
½ lb broken rice,
2 lb fine beef scrap or 1 lb dried blood,
½ lb fine cracked bone,
6 lb sharp grit.

This can be fed either in a self feeding hopper or in the litter every two hours for the first three days. From the third to tenth day, every three hours.

In quantity, for the first three days, a large handful to fifty chicks every two hours, gradually increasing the amount. The hopper will do away with all the trouble of feeding if sufficient of the mixture is placed in to fill it. This will keep the birds going according to the size of the hopper and the number of chicks.

Fresh water, kept in the shade, and plenty of crushed charcoal in a shallow box should be supplied.

Brooder Chicks.

In the case of chickens to be raised in a brooder or foster-mother, great care has to be taken that the birds get all their needs supplied. The first of these is warmth. On being removed from the incubator after being thoroughly dry, they are often left in the brooder for fifteen or twenty hours; the brooder should be heated in readiness for the birds. The general rule is to run the brooder for the first week or so at about 90 degs. Fahr., and gradually lower the temperature to 70 degs. in the third week.

Styles of Brooders.

There are numerous makes on the market, and most of those made by reputable firms are doing good work. Any handy man, however, can construct a satisfactory brooder at a small cost. A very simple and effective brooder can be made by cutting an ordinary box about 2 feet 6 inches square, and placing a false bottom in the box, and on the floor thus made, in the centre of the box, cut a hole large enough to allow, say, a small biscuit tin to go partly through, and place the lamp inside the tin. Punch a few holes to allow the heat to escape. Chicks will nestle around the tin and be quite happy If too hot, the tin may be covered. The sides of the box must be ventilated.

Very successful brooders are used without any lamp, and have only wool strips cut and tacked across the top of the brooder, and just long enough to nestle down on the backs of the chicks. I have also seen a sheepskin tacked down, and the chickens cuddled under it perfectly happy.

Running the Brooder.

The floor of the brooder should have a layer of sand covered with chaff as bedding. This also makes splendid scratching material for the first few days.

Feeding.

The same formula can be used as directed above. Everything must be kept within reach of the chicks—viz., crushed charcoal, grit, water, etc.

Number of Birds to a Brooder.

It is never advisable to run more than forty or fifty chicks, as allowance must always be made for their growth. The brooder that is just large enough to hold sixty chicks a week old will not be nearly large enough in three weeks. Breeders often overlook that fact.

General Notes for either the Foster-mother or Hen.

Chicks should be kept growing from the shell up There should be no check to their growth, and time lost at the beginning is never caught up. It is the first few weeks' care that decides the future condition of your birds. Be regular in feeding, particularly with brooder chicks. If you cannot give the birds regular attention, use a self-feeding hopper and a drinking fountain; the birds will then be able to help themselves.

The whole success of your venture depends on the handling of the young stock.

Cleanliness is absolutely necessary in coops and brooders; they must be cleaned regularly and often.

A Farm Yard Detective.

What the Trap-nest Does

It shows just what each hen is doing. Perhaps a few hens of the flock lay most of the eggs. It picks these out and identifies the 300-egg hen, the 200-egg, the 100-egg, the 50-egg, and the drone, and thus enables the poultryman to choose his stock and build up a good laying strain in a very short time. Feeding the drones is one of the greatest leaks with the poultryman.

It picks out the winter layers. A hen may lay well in the spring and summer, but stop when winter comes. With the trap-nest a good strain of winter layers may be built up.

It enables one to get acquainted with each individual hen. The frequent handling in removing the hen from the nest tames her, and it is the tame hen that is the paying hen. By frequent handling, the breeder will know when anything goes wrong with the hen, and remedy it.

It prevents egg-eating, as the egg-eater is easily detected and killed. The infrequent handling and removing from the nest discourages broodiness.

It picks out the hen that lays the white egg, the yellow egg, the unfertile egg. It may be that two or three hens of a flock lay most of the unfertile eggs, as has been proved by the trap-nest.

It picks out the hen that raises the best chicks. Not always the highest-scoring hen raises the winning chicks. With the trap-nest a breeder can study the results of his matings with each hen. He may have a pen of ten hens, and all the advantages of a pen of one hen. The trap-nest is the only practical way that a breeder can pedigree his stock. The day is surely coming when poultry will be pedigreed as is other thoroughbred stock.

While most breeders prefer the incubator to the sitting hen, the trap-nest comes as a boon to him who has the care of sitting hens. They may be placed in a building or yard away from the laying hens, removed once a day for feed and water, and when they return to the nest they shut themselves in and the other hens out, so they cannot crowd on and break the eggs.

Trap-nests have come to stay. They have been tested, and their value demonstrated. The progressive breeder is welcoming them with delight as a most valuable aid in improving ihs flock, and the time is not far distant when he who does not use them will have very little demand for his stock.

Half the failures in incubating duck eggs are caused by insufficient airing. Too many amateurs are afraid to keep the eggs out a minute after turning. As a matter of fact, in normal seasons, the eggs can be aired twice daily, for a quarter of an hour the first week, twenty to thirty minutes the second, thirty to forty the third and fourth weeks till the twenty-fifth day. Put in your moisture at this stage, and keep the machine closed till they start to chip. Replenish the water quickly, and close up again.—'New Zealand Farmers' Weekly.'

Egg-eating Dogs.

To cure a dog of eating eggs, draw the contents of two or three eggs by making holes in both ends, and fill in with a paste of some kind containing a little red pepper. Do not practise cruelty on the young brute by using a large quantity of pepper—a very little will suffice to give him a poor opinion of eggs as diet for a dog. Another good plan is to draw the contents of the egg, put some strong liquid ammonia into it, and close hermetically. The dog who cracks this egg will never crack another. The dose, moreover, wlil do him no harm.

The Fowls Saved the Farm.

Mr D. F. Laurie, the S.A. poultry expert, relates a remarkable instance of the benefits to be derived from poultry keeping that came under his notice recently during a trip to the Murray. It appears that a German farmer had contracted a debt of some £20 with a storekeeper in one of the towns. He was anxious to reduce his liability, so he took the only 12 bags of wheat he had reaped from his crop to the storekeeper, and offered them in payment of his debt, saying that he would have to sell his fowls as he had nothing left to feed them with. The storekeeper, knowing that the fowls were the only source of revenue left to the farmer, told him to take the wheat back and feed his fowls with it and bring the eggs to the store, and that he (the storekeeper) would supply the necessaries of life. The farmer did so, and so well did the fowls perform that in 20 months they had laid sufficient eggs to wipe out the liability and provide enough to keep the family.

The Value of Green Bone.

The invention of the green bone cutter has certainly been a valuable innovation, and all well-regulated poultry farms count upon this piece of machinery as necessary for the successful prosecution of the poultry work. The green bone must be judiciously given, and must not be offered the fowls with a lavish hand. A pound of cut bone for every sixteen head of stock is about the proper amount, and even then it should not be given oftener than every alternate day. A little goes a great way. Green bone is a complete food. It is rich in nitrogen, albumen, carbonates, and phosphates of lime. These ingredients are essential for the making of the egg.

Rather Smart Sparrows.

A gentleman bought a lot of chickens and commenced feeding them on rice, but could not make out what they did with the large quantities that were thrown down to them. He determined to watch. No sooner had the rice been scattered over the ground than a cloud of sparrows swooped down and made a splendid meal. There was one consolation, and that was the chickens would soon be 'fowl' enough to eat Indian corn. Next morning came, and he threw down corn, thinking he would be one in front of the sparrows, but no such luck. They came as usual, and picking up the corn flew away with it to a railway, placed it on the rails, perched on the telegraph wires, and waited for a train to come by and smash it ? He has since given up keeping fowls for profit. This is not a Yankee yarn : it comes from Birmingham.

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3 FEEDS FOR ONE CENT
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ADELAIDE.

Age Limits of Dairy Cows.

A bulletin from the Wisconsin Station states that a cow is at her best during her fifth and sixth years up to which time the production of milk and butter-fat by cows in normal condition increases each year. The length of time the cow will maintain her maximum production depends on her constitutional strength, and the care with which she is fed and managed. A good dairy cow should not show any marked falling off until after ten years of age. Many excellent records have been made by cows older than this. The quality of the milk produced by heifers is somewhat better than that of older cows, for a decrease has been noted of one to two-tenths of one per cent. in the average fat content for each year until the cows have reached the full age. This is caused by the increase in the weight of the cows with increasing age. At any rate, there seems to be a parallelism between the two sets of figures for the same cows. Young animals use a portion of their food for the formation of body tissue, and it is to be expected, therefore, that heifers will require a larger portion of nutrients for the production of milk or butter-fat than do other cows. After a certain age has been reached, on the average seven years of age, the food required for the production of a unit of butter-fat again increases both as regards dry matter and the digestible components of the food. A good milk cow of exceptional strength, kept under favorable conditions, whose digestive system has not been impaired by over-feeding or crowding for high results, should continue to be a profitable producer till her twelfth year, although the economy of her production is wont to be somewhat reduced before this age is reached.

Deterioration of Milk.

It seems to be very difficult for a great many dairymen to understand the importance of keeping milk clean—allowing no foreign substances like pieces of straw, dust, and even particles of manure to get into the milk They will tell you that they strain it through two thicknesses of cheese cloth, and remove all these foreign substances, consequently the milk ought to be clean. The fact is that straining the milk does not do as much good as they imagine. The hair, or the bit of straw, does not do so very much harm. It is the bacteria, or microscopic organisms, little microscopic plants, adhering to these foreign substances which really do the harm, and these bacteria cannot be removed by straining the milk. The only thing to do is to keep them out in the first place.

When milk is drawn from a cow's udder it is perfectly clean and wholesome. In other words it is what is known as sterile milk. If it can be kept in that condition it does not spoil. Dr. Marshal, the bacteriologist of the Michigan Agricultural College, succeeded in keeping some from a cow absolutely clean and sealed it up in a glass vessel. This milk keeps sweet. There is nothing to sour it. It is now about two years since it was drawn from the udder of the cow and yet no change has taken place. Many people would not believe this if they did not know it.

ST. ELMO
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14 Hands High. Plenty of Substance.
Splendid Action. Good in all Harness.
Is by Young Tipperary ; grandsire, Tipperary.
Dam, Leah; by Sir Lucius O'Trigger ; g. dam, Lily, by Rushtroom (Imp.) : gg. dam, Conrad's Mare.

FIRST PRIZE, Adelaide Show, September, 1906.
FIRST PRIZE, Gawler Show, September, 1906.
FIRST PRIZE, Two Wells Show, September, 1906.
FIRST PBIZE, Mount Barker Show, March, 1207.

Extract from THE REGISTER :- Among an excellent lot of ponies Mr. A. Brown's St. Elmo stood out prominently by defeating two hardened prizetakers in the entire class between 13.2 and 14.1 hands.

TERMS, £2 10s., payable on or before 1st January Groomage, 2s, 6d.
A. BROWN, Proprietor.
Tattersall's Stables, Pirie Street, Adelaide.

Mr. Gurler, of Illinois, produced milk that was sent to the Paris Exposition a few years ago. Twenty-two days after that milk was drawn from the udder of the cow it was inspected in Paris, and was found sweet and wholesome. This was made possible simply because the reason for the deterioration of milk was fully understood and proper precautions were observed in keeping the milk clean.

In every cow-yard thousands and thousands of particles of dust are floating in the air. These particles of dust have bacteria adhering to them. If this dust settles into the milk pail the bacteria change from a dormant state to a very active one. Bacteria requires food and moisture and a certain temperature in which to multiply and grow. Warm milk furnishes the right condition for their most rapid development. Again the hairs from the cow and pieces of straw and hay in the stable are covered with these microscopic plants, and if we allow them to drop into the pail we introduce into the milk large numbers of bacteria at once.

Of course there are different kinds of bacteria. Some are harmful and some are not. One kind of bacteria turns the milk sugar to lactic acid or causes the milk to sour. These bacteria are not particularly detrimental. We can consume sour milk with no particular detriment to health, but the trouble is that we are liable to have other kinds of bacteria which are harmful in the milk as well as these lactic acid bacteria. In a filthy cow-yard we are liable to get bacteria which produce bowel complaint or cholera morbus, a disease so prevalent in children.

The manure from cows almost always contains this kind of bacteria, and if we are unclean enough to allow any of these bacteria to get into the milk it is absolutely dangerous to consume the milk.

When bacteria once gets into the warm milk they multiply faster than very many of us have any idea. Some very interesting experiments have recently been made at Cornell University. First, a hair from a cow's flank was put into 500 cubic centimeters of milk. The milk was shaken for one minute, and upon examination it was found that there were 52 bacteria to the centimeter. In twenty-four hours the number of bacteria had increased to 55,000 per cubic centimeter. Again, a piece of hay from the stable floor 2in. long was put into 500 cubic centimeters of milk. This milk was shaken for one minute, when it was found that it contained 3,025 bacteria per cubic centimeter, but after twenty-four hours, upon examination, this milk was found to contain 3,412,000 bacteria per cubic centimeter. Now, as every one knows a cubic centimeter is an exceedingly small quantity of milk—only a few drops. The only way, then, to have good milk is not to allow very many of these bacteria to get into it. Of course, it is not practical to keep them all out. That couldn't be done in a dairy, but we want to keep the cows clean and keep the bails and yards reasonably clean, draw the milk in a cleanly manner, have the pails clean, and keep out just as many bacteria as possible.

Since bacteria multiply so rapidly, and since it is absolutely impossible to keep them all out of milk, it is necessary, if we want to keep the milk for any length of time, to do something to keep the bacteria from multiplying so rapidly. This can be done very easily. If bacteria multiply very rapidly in the milk the milk must be warm. If we cool the milk down to a temperature below 60deg., bacteria multiply in it very slowly,

This is the reason why we ask the dairymen to cool down their night's milk or cream after each separation—simply to get it so that these bacteria can't multiply rapidly and destroy the milk or make it unwholesome. It does not do very much good to cool either milk or cream down and then let it warm up again in hot weather. Just as soon as the milk gets up to a certain temperature again the bacteria commence to grow. The thing to do is to cool the milk down just as soon as possible after it is drawn from the udder of the cow and then keep it cool until it is made into butter or cheese or consumed direct as human food.

From the above any one can readily understand why it is necessary to wash dairy utensils clean. If a little milk is left in the seams of the can or milk pail, the milk contains bacteria, and they grow and develop at a wonderful rate. Now when warm milk is put into this can, or pail, there are thousands and thousands of bacteria ready to grow and multiply, and there is no use trying to keep cows clean and the yard clean and then have dirty dairy utensils. It is cleanliness from start to finish if we want good milk, and, besides that, be as clean as we will, we shall still have some bacteria, so we must reduce that milk to a temperature in which they will develop slowly.

Undertakers.

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Fodder.

Prairie Grass (Bromus unioloides).

This is one of the most valuable perennial grasses of our cooler districts. It was introduced in the early days of the colony, and is to be found growing wild in many districts. It is a very nutritious grass, produces a great amount of feed, coming away early in the winter, except in the coldest districts. It stands well into the dry weather, making fresh growth after rain. The plant makes tussocks of considerable size. Many farmers have the objection to Prairie Grass that it does not stand grazing. "Stock eat it out and destroy it, while other grasses persist," is a frequent remark. This, however, is due to the fact that stock are remarkably fond of it, and will eat it right into the ground, even when there is plenty of other grass in the paddock. It is usually the inferior grasses that are left, thus giving the ordinary observer the idea that these grasses are hardier than those eaten out by stock. It would pay most of our stock-owners in the cooler districts to grow a few acres of prairie grass, but judgment must be used in feeding it off. Stock should be removed as soon as the grass is eaten fairly down, and the paddock spelled for a short period. This could be best achieved by dividing the area into three or more blocks, according to the size, and feeding them down in rotatian.

Golden Crown Grass (Paspalum dilatatum).

Probably no other grass has had so much written about it during the past five or six years as this. It is a perennial grass, very hardy in so far as heat is concerned, but liable to injury by severe frost. The herbage is much relished by stock of all descriptions, and is very nutritious. In the moist districts of Victoria and in New South Wales and Queensland successive crops of feed are obtained throughout the summer, and it is generally agreed that the carrying capacity of the land has been greatly increased where Paspalum is grown. It has been invaluable to many dairymen. In South Australia, however, the results have been nothing like those secured in the Eastern States. Even under moderate irrigation it has not done as well as expected, and the writer, who has experimented with it on a small scale for the past eight years, is of opinion that the dryness of our atmosphere during the summer months is largely the cause. Grown with a 25 inch rainfall, without irrigation, alongside lucerne, it has produced more herbage in the late autumn, when we have had good early rains, and also in the spring, but the lucerne has made more growth during the summer. When irrigated during November and December it has been cut three or four times, but has given no more bulk than irrigated lucerne, if as much. On the banks of watercourses it makes a very useful plant, and it will grow where several inches of water is running over it for several months.

Veldt Grass (Oryzopsis milaceum).

It is deserving of attention on account of its hardiness and the amount of fodder it produces. It has been sold as Piptatherum Thomasi, and is also known under such names as "Falling Awn Grass," "Millet Grass," "Veldt Grass," etc. Specimens submitted to Mr J. H. Maiden, F.L.S., Botanist to the New South Wales Department of Agriculture, have, however, been identified as Oryzopsis miliaceum, some of the synonyms of which are Milium multiflorum, Piptatherum miliaceum, P. Thomasi, and P. multiflorum. Plants of this class are doing well at Roseworthy College on the light sandy soil, and are also thriving in other parts of the Lower North. It is a very hardy perennial, and grows rapidly after the first rains, and keeps beautifully green until the hot weather sets in, when the leaves and stems become tough and dry. Stock are very fond of this grass, eating even the old dry stems very readily. It is rather woody when mature, and not so nutritious as many other grasses, but owing to its hardy nature will thrive where the latter would fail. It seeds very freely, but when sown in the ordinary way germination is not as regular as might be expected. Under favorable conditions it makes large tussocks several feet in height in a few months.

WEIGHTS AND MEASURES.—Two tablespoonsful liquid equal 1oz. One tablespoonful salt equals 1oz. One heaping tablespoonful brown or granulated sugar equals 1oz. Two tablespoonsful powdered sugar equal 1oz. One heaping tablespoonful sifted flour equals 1oz. Three tablespoonsful grated chocolate equal 1oz. Four tablespoonsful liquid equal one wine-glass. Two wine-glasses equal 1 gill. Twenty-five drops equal 1 teaspoonful. One quart wheat flour equals 1lb. Ten ordinary eggs equal 1lb.

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Send us along a trial order.

Nerine Japonica (Japanese Spider Lily)
See Page 5.

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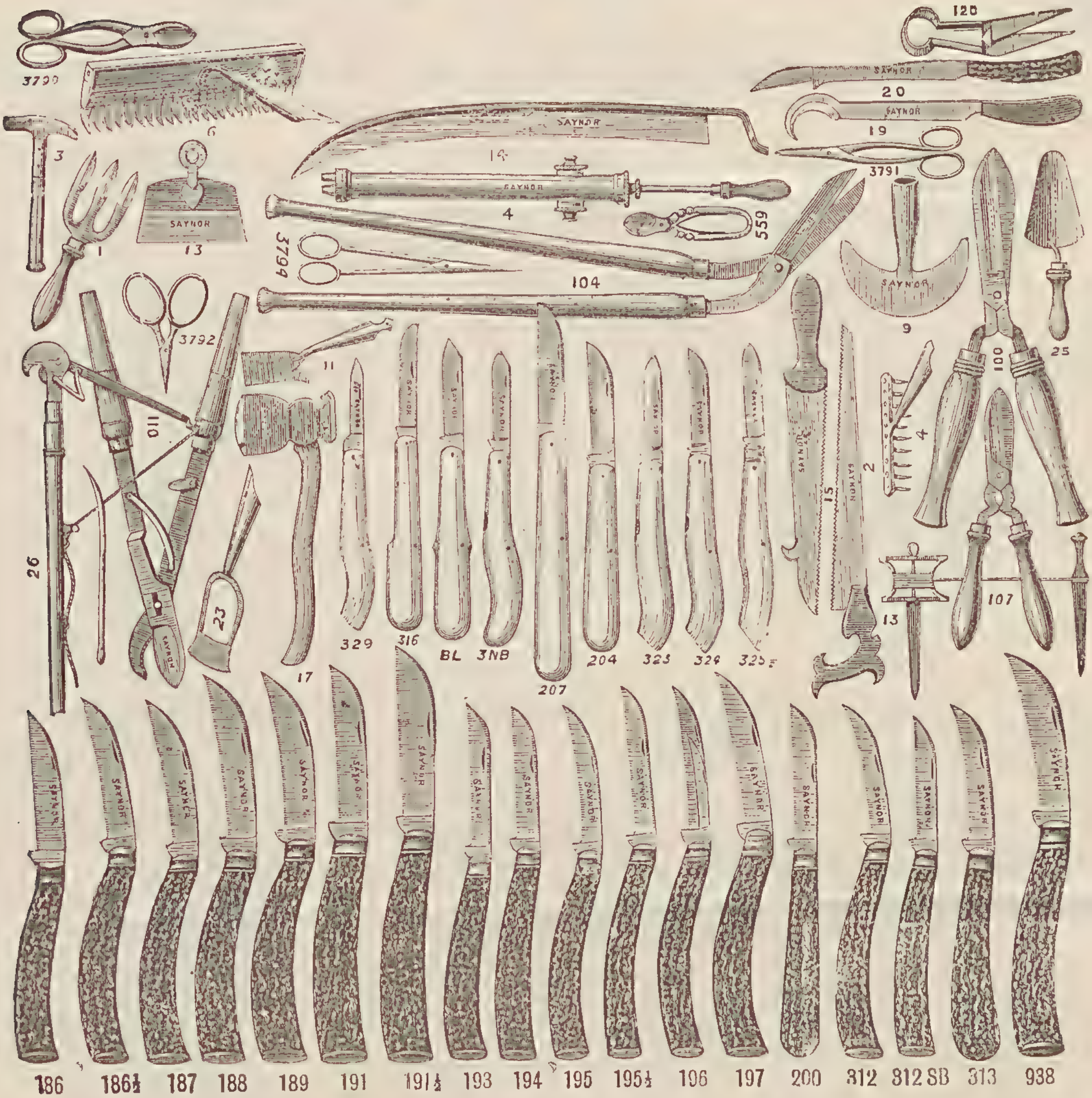

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Feed for Stock.

One of the chief requisites of a ration for profitable milk-production is that it be succulent, by which is meant that a portion of the ration contains a large percentage of water. This watery condition, or succulency, adds to the palatability of the food, and also seems to have a beneficial physical effect upon the animal digestion. The cow, therefore, eats a larger quantity of food, digests and assimilates it more thoroughly, and consequently gives a larger flow of milk. Every section of our State has a longer or shorter period during the year when pastures are dry. The provident dairyman, therefore, anticipates these dry months, and either lays in a store of green feed beforehand, or has some growing which he may cut and feed to his cattle.

Roots.—Several of the vegetables are valuable in supplying succulence for the ration. Among the root class the one in most common use is the mangel-wurzel beet, because very large quantities can be grown per acre, and because it is palatable to all kinds of live stock. Carrots are also used in some sections, and they have the advantage of containing a slightly larger amount of dry matter than mangels. Of all the roots, moreover, none are more relished by horses than carrots. Sugar beets are not found profitable to grow for feeding stock, because they yield so small a tonnage in comparison to mangels, and the greater cost of growing and gathering can only be undertaken on the ground of their greater value for sugar. Potatoes contain about twice as much dry matter as mangels and three times as much carbonaceous material. They are, therefore, of greater food value, but, like sugar beets, have too high a commercial value as human food to make them profitable for stock.

Squashes.—Another class of vegetables which are useful and easily grown is that of melons or squashes. A very familiar example is the so-called pie-melon. This, like the ordinary field pumpkin, can be produced readily in large quantities on most lands, and it ripens at a time when green feed is likely to be scarce. All of these vegetables when fed to dairy stock produce an increased milk yield, which is more than commensurate with their actual content of food substance. This is because of their palatability, beneficial effect upon digestion, and the addition of a wholesome variety to the ration. Any of the vegetables named may be fed with profit to swine and poultry when in confinement, and to sheep, especially when in the nursing period.

Silage.—One of the most economical means of preparing succulent food for seasons of drought and for supplementary feeding is by the use of the silo. It is, no doubt, generally understood that the silo, as at present constructed, is a huge tank having perpendicular walls and being made as nearly air-tight as is convenient. The usual size for the silo is 15 to 20 feet in diameter and 30 feet high. Into the silo is put the green fodder immediately after being cut fresh in the field. The most common crop for ensiling is Indian corn or maize, which is, moreover, the most profitable plant to grow for this purpose. At one harvest it furnishes a larger tonnage per acre than any other crop. The stalks, which if cured dry would be largely wasted, are kept in so soft a condition in the silo as to be completely eaten by the stock. Other plants, such as lucerne, barley, oats, and orchard grass, are sometimes ensiled, but we would not recommend their general use except in seasons or localities where corn may not at the time be available, or in case they might otherwise be rendered more or less useless if cured dry; as, for example, the first cutting of lucerne with its usual mixture of grasses. Almost any plant grown on the land may be ensiled. The chief question is, what can be most profitably made the main crop for the purpose? The proof is abundant that Indian corn is the most profitable. The sorghums and sweet corn do not answer well for ensiling, because of their high content of sugar resulting in too much fermentation in the silo.

No better combination of foods for feeding cows in the stable can be imagined than lucerne hay and corn silage, and possibly a little grain, although a fairly well balanced ration may be made up without grain. In such feeding it is best to give hay and silage each once a day. The amount of silage per head ranges from 35 to 60 lb. daily, depending upon the size and appetite of the animal and upon the supply of silage. The cattle will eat corn silage at all seasons of the year, even when on good lucerne or other green pasture; but if the supply be limited it can be most profitably fed when pastures are dry, or if the cattle should be kept off them because of heavy rains, or until the grass is of sufficient age and size to be of value. If the dairyman will erect silos and have their cows calve in the fall instead of spring they can secure as large a supply of milk during the season when dairy products are usually high-priced as they now have during the low prices of the spring months. Corn silage may be fed with profit to sheep as well as cattle, but not to other stock. Lucerne silage is fed successfully to all farm stock, including swine and poultry. Horses working hard should be given such watery food in very small quantities; while those at light work or doing nothing may be fed more, and will even make profitable use of some corn silage.

Salt-bushes.—The salt-bushes have a two-fold value, in that they are not only valuable forage plants but can be cultivated in soils containing alkali beyond the limit of tolerance for any other plant of similar food value. Of these the Atriplex semibaccata is the only one which has received any extended attention in this State.

It is specially worthy of mention that while the salt-bushes differ materially botanically, and are not of equal adaptation, there is very little preference so far as chemical composition is concerned. But much further experimentation will be required before the same can be said of them physiologically, or with respect to nutritive values.

The choice of the best variety for a special locality would depend on soil adaptation and the results of feeding experiments.

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August Number of 1907

The Australian Gardener

(A Monthly Journal of Floriculture, Horticulture, Agriculture, and Poultry),

CONTAINS—

The Vegetable Garden—
Operations for August

Flower Garden—
Roses.
The Iris.
Plant Notes.

The Orchard—
Operations for August.
Grafting.
Destroying the Codlin Moth.

The Dairy—
How to Produce Pure Milk.
Why Dairying Pays.

The Poultry Yard –
The Wyandotte.
Chicken Pox.
One of Noah's
A World's Egg-laying Record.
&c, &c., &c

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EDITORIAL

THE proprietary of "THE AUSTRALIAN GARDENER" wish to acknowledge with many thanks the continued support of subscribers and the general public. The present is the sixth year of publication, and we aae pleased to state that our circulation has increased by 20 per cent. during the past three months.

Will our subscribers kindly forward their subscriptions as early as possible. We have no desire to ask for pavment in advance, but some of our friends are no less than three years in arrears.

The August number is full of special interest to gardeners and farmers, and also to the less pretentious surroundings of villa and cottage.

We would direct special attention to our poultry notes.

We shall be pleased to receive letters for publication on any question of interest to our readers, and also to answer any correspondence. In future we shall answer correspondents through our columns instead of writing direct.

COMMERCIAL AND ORNAMENTAL PRINTING of every description in first-class style, on the shortest notice, and at cheapest rates, at the "Australian Gardener" Office, corner of Pirie and Wyatt streets.

To Correspondents.

"F.W"—It is late to sow main crop of peas, but as the season is so favorable plant as soon as possible for a late crop. and with proper attention you will still be able to get an abundance of good peas for your private use. We cannot advise sowing in trenches; dig the ground well and mix in rotted stable manure, rake the bed level. and plant about 3ft apart. You will get a better crop by setting singly. There is a splended late pea in the market, the Omega. Yes, it is better to use sticks, you will get a better crop.

"A, BAXTER."—The Spanish fowl is a good layer of large white eggs, but is not of much account for the table. This bird, if it had the same amount of care and breeding as White Legherns, we think would break the record as egg-layers.

The September Show.

The annual Show of the S.A. Royal Agricultural and Horticultural Society will be held at the Exhibition Buildings and Grounds on Wednesday, Thursday, Friday and Saturday. September 11, 12, 13 and 14. The value of the prizes amounts to £2,460. With one of the best seasons in prospect that the State has ever had, this Show should eclipse anything of the kind ever seen in Adelaide. Mr J. Creswell, the indefatigable secretary, has everything worked out according to his splendid organising resourcefulness, and there apperrs to be nothing wanting to make a record Show. A concert will be held on Thursday and Friday evenings, and there will be excursion fares on all South Australian railways.

The Vegetable Garden.

GIANT IMPROVED EMPEROR WILLIAM FRENCH BEAN.

Every effort should be made to get things ready for the sowing and planting of spring vegetables, and for the planting of evergreens in the flower garden or shrubbery; for, although the best time of year for planting them is during early autumn, with care and attention they will probably succeed satisfactorily if planted before hot weather sets in.

Asparagus.—It would be desirable for those who intend to plant asparagus to prepare some land as soon as possible, for they can plant in August, or early in September and it is no use leaving the preparation of the ground until the last moment. Asparagus is a vegetable which gives very little trouble after it is once planted. At the present time of year the haulm should be all cleared away, the soil between the rows cleaned and forked up, and a dressing of manure spread over the bed as a sort of protection during the very cold weather: but in many districts such protection is unnecessary. The manure may be forked in just before spring, and the stools begin to start with growth.

Artichokes, Globe.—May be planted out now in those districts where the rainfall has been good, and other conditions are favorable, but there need be no hurry about the work until the early spring. Either young plants or suckers may be planted. This vegetable needs good soil to enable it to produce the artichokes, which are the flower buds and are gathered just as they are about to open.

Beans, French.—In the warm districts along the coast seeds may be sown towards the end of the month; but whenever there is a possibility of a visitation of frost, a sowing had better not be risked.

Broccoli.—Sow a very little seed occasionally in order to keep up a supply of seedlings to plant. Any plants already to hand and sufficiently advanced may be planted. The soil should be in good heart, or the broccoli is not likely to succeed as it ought.

Cabbage.—Plant out from time to time during the month, and sow a little seed occasionally in order to keep up a supply of plants. Be not sparing of manure if you wish to grow good cabbages, for this vegetable is a gross feeder, and should be well treated.

Carrot.—There are many varieties of carrot, from extremely small to large. The small kinds are the best to sow during the month. Whilst young, the carrot is a tender and weak little plant, and is easily choked by weeds if they are not kept in check. Advancing plants should be thinned out gradually.

Cucumber.—Those interested in raising early cucumbers can raise seed under a glass frame in a warm place, or on a hot bed if one has been made. The seedling can be planted out next month, but must be protected from late frosts.

Endive.—Sow a little seed occasionally in the warm parts of the State.

Leek.—Sow a little seed, just a pinch or two, during the month from time to time, in a seed-bed. Plant out any leeks that are large enough to move to a bed made rich with abundance of manure. Plant the leeks in shallow trenches, give them abundance of water during their growth, and when nearly full grown earth up the stems.

Lettuce.—Sow a little seed occasionally during the month. Transplant from a seed-bed of a previous sowing any young lettuces that have sufficiently matured, and be cautious not to break their roots more than can be avoided. Use plenty of manure, and try to grow the lettuces crisp and tender.

WHITE PARIS COS LETTUCE.

Onions.—A little seed may be sown occasionally if it be considered that sufficient ground has not already been laid down to onions. Plants may be transferred from seed-beds to the garden if the weather be suitable. If seed be sown during the month, some fine young plants should be ready for planting out in the spring.

DANVER'S YELLOW GLOBE.

Parsnip.—Sow a little seed from time to time during the month in drills. The parsnip is a deep-rooting plant, therefore it is desirable to prepare the ground well and dig deep preparatory to sowing.

Peas.—Sow during the month, from time to time, as extensively as may be required, for peas should grow well at this time of the year if the season is at all favorable. The rows should be from 3 to 4 feet or more apart. Plant the peas about 3 inches deep, and about 4 inches apart.

Potato.—Plant a row or two during the month, in warm districts.

Radish.—When used young and tender the radish makes a most useful change. There are many varieties, some of which are very pretty when nicely cleaned and arranged as a salad. Prepare the ground well, and use plenty of well-rotted rich manure. Sow but a few seeds at a time, say once or twice a week, in drills.

FRENCH BREAKFAST RADISH

Savoy.—Sow a little seed and treat it as you would the cabbage, using plenty of manure.

Spinach.—Sow a little seed now and then during the month to keep up a supply if required, in drills 2 feet apart, and thin out the seedlings when they come up to about 1 foot from plant to plant.

NEW ZEALAND SPINACH.

Swede.—Sow a little seed occasionally in drills.

Tomato.—Raise in a warm protected place a few plants if cuttings of last year's plants are not rooted. The seedlings will need protection from frosts where they are likely to occur.

Turnip.—Sow a little seed in drills.

Herbs.—These may be planted out whenever required. A vegetable garden should never be without a good collection and some little trouble should be taken to keep the plants in decent order. Very often they are neglected, and have not a fair chance to grow properly.

The Flower Garden.

ROSE—THE "BESSIE BROWN."

Roses.

This world that we're a livin' in
Is purty hard to beat,
You get a rose with every thorn.
But—ain't the roses sweet?

The time has come when the renovation, or laying out of beds and borders of roses must be taken in hand, the work to the enthusiastic amateur being a labor of love. The successful rose-grower of necessity is an unalienable worshipper of the Queen of Flowers, for his appreciation of the pre-eminent blooms leads by encouraging observation and stimulating attention to intelligent and systematic cultivation. Some, while admitting the sweet fragrance of the rose, and the beauty and luxuriance of a neighbor's garden, get only the thorns instead of the roses, for with half-hearted work they plant their trees, expecting them, because they are sorts recommended by a successful rose exhibitor, to establish themselves and grow out into floriferous wonders for all the vicinity to admire. But the best results only come from knowledge and a continuity of effort, and it is well that it is so, for it gives the results to the genuine lover, whose motto is "The rose first: spectacular display and exhibitions after." The result is that the true lover eventually gets the best results, and having the roses, also obtains the display and the competitive successes, discovering more and more as time goes on a suitable and inspiring charm about the rose, so fragile and so sweet, that he is proud to confess with the ancient poet that

Should Jove appoint some flower to reign
In matchless beauty on the plain,
The rose, mankind will all agree,
The rose the Queen of Flowers should be.

Roses are better when grown in beds or borders specially prepared for them. In mixed borders they frequently do well, but are oftimes allowed to become practically choked out of all opportunity for development by the juxtaposition of gross-growing shrubs. See that they have ample room. They delight in an abundance of light and air, and yet require shelter from keen boisterous cold winds, and also from hot ones. They will grow in almost any soil, but, generally speaking, do best in a deep rich and

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ROSE—"MRS. EDWARD MAWLEY."

rather heavy loam. Stiff heavy soils can be ameliorated by the addition of ashes, soot, leaf mould, organic manures and straw, while sandy soils can be changed to the ideal nature by the adding of clayey soil. In the latter, noisette and tea roses do very well. Cut away clean all bruised roots before planting. See that the land is well drained, and yet capable of retaining moisture. A good system of manuring is to apply a good coating of stable litter in the form of a mulch, subsequently digging it in.

Pruning is the most important work just at present. Experts hold varying opinions as to when and how different varieties should be pruned, but it is really a matter of soil and climate. Because Bill Jones gets his best results by pruning early, it does hot follow that you will not do better by pruning late. And roses do not all require to be pruned back as was once the custom. The varieties must be studied, and the suitability of long, medium, or short pruning can soon be determined. The hybrid perpetuals, flowering mostly in spring, obtained by the crossing and recrossing of Damask Provence and French roses with others, are robust growers, with stiff thorny shoots, carrying large buds. Severe cutting on these results in a superfluity of wood growth. A good decorative effect can frequently be obtoined by tying down the long shoots to stakes. Short twiggy growers should be cut hard. Blooms are produced only from new, well-ripened wood of the previous year's growth, so it must be remembered that new wood each year is a vital necessity, that it pays to rejuvenate the trees by replacing old standard limbs with new growth when development seems to be stagnating, and also that the first work of the pruner is to cut out all dead wood and weak or soft watery shoots. Bourbons should be cut as soon as they have finished flowering. The hybrid teas, resulting from the hybrid perpetuals crossed with tea and noisettes, should be pruned according to habit and growth. As a rule, they do not need hard pruning but sorts like Lady Mary Fitzwilliam can be pruned close. Tea, noisette, and banksia roses should not be pruned early in cold, frosty districts, but hybrid perpetuals and Bourboas will not suffer by it. With rampant growers, it is sometimes advisable to tie down the strong shoots, as this checks growth and induces flowering. Removing leaves also lessens vigor. By varying the time of pruning of individual roses, a succession of blooms for a longer period can be obtained. Two roses, pruned at different times, will not flower together. Tea roses do not require severe pruning.

What to Plant.

Each rose votary has his own favorites. Selections of best roses have been frequently made by hundreds of growers, but scarcely ever has two lists been alike. We do not intend to enumerate the best roses, but in the list below would-be growers who do not know what to plant

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will find many varieties which will be hard to beat.

Hybrid Teas.—Belle Siebright, Lady Mary Fitzwilliam, Mrs R. Garrett, La France, Duchess of Albany, Kaiserin Augusta Victoria, Mildred Grant, Caroline Testout, Tennyson.

Hybrid Perpetuals.—A. K. Williams, Jubilee, Mrs John Laing, Clio, Captain Haywood, Prince Camille de Rohan, Abbe Bramerel.

Teas.—Ernest Metz, Maman Cochet, White M. Cochet, Devoniensis, Seffrano, The Bride, Bridesmaid, Queen Olga of Greece, Souvenir d'Elsie Vardon, Muriel Grahame, Papa Gontier, Madam Carmody, Marie van Houtte, Alexander of Russia, Catherine Mermet, Auguste Comte, Mrs Edward Mawley, Mdlle. Jules Grobz, Francois Dubrenil, Empress Alexandra of Russia.

Others.—Cloth of Gold (N.), Carl Brunner (P.), W. R. Richardson (N.), Marechal Niel (N.), Souvenir de la Malmaison (P.), Niphetos (T.), Souvenir d'Ami (T.)

Climbers.—Climbing varieties of many of the above-mentioned sorts can be obtained, and will do well. But for spring displays and rapid growth, Fortuniana, Banksias (yellow and white), Fortune's Yellow, and Reine Olga de Wurtemburg are recommended.

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IRIS KÆMPFERI.

The Iris.

(By J. Cronin.)

Iris is a genus of bulbous and herbaceous plants found native in various parts of Europe, Asia, Africa, and America. There is a large number of species, many of which have been cultivated in European gardens for centuries, and from which garden forms that are superior in many ways to the types from which they originated have been raised by intercrossing and selection. The types being so numerous, and the geographical distribution so wide, flowers of some species or varieties of iris may be seen in bloom at almost any season of the year, and under most varying conditions. Some kinds require a warm dry situation, with abundance of light and sunshine, while others are denizens of swamps, and require moist and shaded conditions to bring them to perfection The flowers of most species are very beautiful, and are extensively used for decorotion in Europe, where, in addition to the varieties grown in the flower garden, bulbous kinds are grown in pots snd forced into flower prematurely in heated glass houses. Orris root, used in medicine and perfumery, is derived from Iris florentina a species worthy of culture as a garden plant.

Irises are divided into several sections, but for the purpose of these notes it is sufficient to mention the principal groups only. The most generally grown in this State are the Flag irises (Iris Germanica and its varieties), in which are included other types and their hybrids. The chief characteristics of this group are:—The foliage is broad and in most varieties dwarf, rising from a creeping root-stock or rhizome, and the flowers large, generally blue, purple, and white in color. They are all hardy and will thrive in almost any situation. Flowers of this section are produced in spring. The Japanese iris (I. Kæmpferi) is fibrous rooting, and produces tufts of foliage 3 or 4 feet in height when well grown, above which the large distinct flowers are borne during summer. There is a greater range of color in this, than in any other section. It grows to perfection when planted beside water-courses and in other damp places, but will also thrive fairly in ordinary borders if the soil is of a loamy nature. It may be seen blooming during the summer months in the mixed groups and borders, and produces fine plants that bloom freely in most unlikely places.

The Spanish and English irises (also known as Xiphions) with other species, including reticulatum alatum and junceum are true bulbous plants that produce their flowers during spring and summer. In the so-called English irises, the original types of which are natives of Spain and Portugal, the colors of the flowers are white and purplish shades; while the flowers of the Spanish irises are yellow, bronze, white, and lilac in color. The foliage of this class is usually narrow and rounded.

The irises are plants worthy of much more extended culture in this State, being in most cases very hardy and easily grown—thriving without artificial watering. They produce beautiful flowers, which are excellent for general decorative purposes, and totally unlike those of any other hardy plant.

Soil—Situation—Culture.

The Flag iris will succeed in almost any kind of soil, that of a loamy nature being most suitable. No manure is required unless the soil is very poor and shallow, when some well rotted cow or stable manure should be incorporated. Good drainage and sunny positions should be provided. The plants are increased by divisions of the root stock. A piece of the parent plant may be cut off with

JULIUS LELLMANN.

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GERMAN IRIS.

roots attached, and planted at about the same depth as originally occupied; the bare covering of the creeping shoot—as it really is—being sufficient. The soil should be firmly pressed and afterwards watered as in the case of planting out generally. After culture is mainly cleaning and weeding. I. Kæmpferi is an example of herbaceous iris with fibrous roots, and is propagated by dividing the parent crown or tuft. This class requires a cool moist soil. While damp, or even wet situations are suitable, it must not be assumed that they will succeed in sour soil. They will endure abundance of moving water, but not that which is stagnant. Divisions of the fibrous rooting kinds may be planted during autumn or early spring.

The bulbous section should be planted at a depth of 4 to 6 inches, and about 4 inches apart to allow for multiplication. They are most effective in the garden when planted in large patches, and may be allowed to grow undisturbed for three or four years.

A number of varieties of many of the types undermentioned are available from the nurserymen or seedsmen. Iris Germanica, many varieties; Kæmpferi, many varieties; fimbriata, florentina, pavonia—the peacock iris; Xiphium—Spanish iris, many varieties; Xiphioides—English iris, many varieties; ochroleuca, pallida, reticulatum; stylosa, and stylosa alba—winter flowering species: bicolor, and many others.

Mr. L. H. Howell's New Catalogue.

Mr. L. H. Howell, of Mount Victoria, New South Wales, has been for years putting out from his nursery some of the finest Gladioli and Sweet Peas that come into the market. He is an enthusiast in these beautiful flowers, and this fact alone warrants an absolutely reliable article which in itself is one of the best recommendations to the amateur gardener, who has to depend so much upon the integrity of his nurseryman to supply him with bulbs that are genuinely selected by a man who thoroughly understands his business. Mr. Howell's gladioli bulbs are not only reliable, but their careful selection from his crossings of pure bred stock warrant them true to type and name. Finally, to the satisfaction and pleasure of the gardener, the blooms that reward his labors are extremely beautiful. From our own experience in testing Mr. Howell's gladioli we have no hesitation in recommending our readers to send to him for a selection. Let him do the selecting and we undertake to say that further orders will go forward to him. We know of nothing on the market that gives greater satisfaction. The colors are rich and good, and varied in tints to a charming degree.

Mr. Howell is also a specialist in that ever delightful and fragrant flower, the Sweet Pea. This flower has become such a favorite in America that some discussion has been going on as to whether it should not rank above the Carnation as a national flower. The superb richness of color shown in the blooms grown by Mr. Howell would rank well with anything to be found in the catalogues from the new or the old worlds over the sea.

We have as much pleasure in recommending our readers to send to Mr. Howell for his Sweet Peas as we have regarding his bulbs of Gladioli, for which he has earned such an enviable reputation.

The Orchard.

[By James Lang.]

Pruning will require to be pushed on with all speed during the month. In pruning young trees, regard should always be given to shape. Three branches are enough to start with; these will form the foundation, and subsequent branches should radiate as nearly as possible at equal distances apart, so as to form a well balanced tree. In pruning the main branches, remove about two-thirds of the growth and cut back to an outside bud, leaving one-third to form the future branch.

Where an orchard is in an exposed situation and subject to strong winds blowing from the one direction, trees are apt to grow one-sided. This should be counteracted as much as possible when the trees are young by pruning to an outside bud on the windy side, and to an inside bud on the lee side, and so throw the tree against the wind. Good judgment will be required in cases like this, but always have in view that your trees should be well balanced; nothing looks worse in an orchard than to see trees leaning to one side.

Old trees should be regulated by having some of their branches cut out where they are rather close: this allows a free circulation of air, and is also an advantage in spraying. Fruit spurs on old trees should be judiciously thinned out and shortened back; this will allow the trees to bear a much better quality of fruit than in cases where this treatment is neglected.

Tree planting should be pushed on. In selecting the varieties of apples and pears for planting, preference should be given to export varieties, as we must now look to our export trade to make fruit-growing remunerative. Jonathan, Cleopatra, Munroe's Favorite, Newtown Pippin, Esopus Spitzenberg, London Pippin, Rome Beauty, Sturmer Pippin, and Dumelow's Seedlings, are the best varieties, and bring the most remunerative prices. In pears, Winter Nelis, Josephine de Malines, Glou Morceau, Beurre Clairgeau, Beurre d'Anjou, Beurre Diel, and Vicar of Wakefield, are the best.

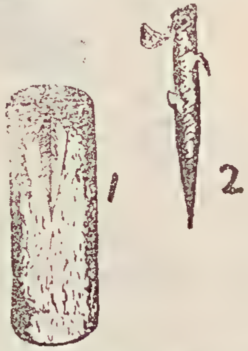
It is a matter for congratulation that pears have carried well this season, very few being returned as rotten. This is in striking contrast to the experience of other years, when the bulk was returned as rotten and wasty: it points to more care being exercised by the shipping companies, who now generally allot a small chamber for the carriage of pears at a lower temperature than for apples. The prices realised this season will encourage growers to ship pears on a much larger scale than has hitherto been the case.

All kinds of small fruits should now be planted. Strawberry plantations that have been more than three years planted should be renewed.

Grafting.

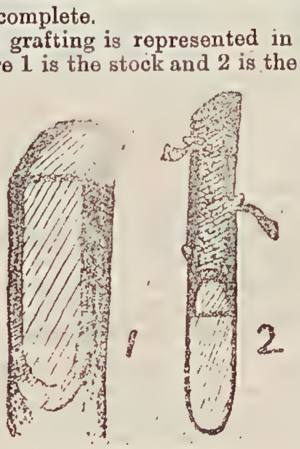
The time for grafting deciduous fruit-trees is approaching. Grafting was referred to in the writings of Pliny and other ancient authors. It would appear, however, from their writings that the principles were very imperfectly understood, or they would not have entertained the belief that the vine could be grafted on the walnut or cherry, the peach on the willow, or that black roses would be the result of grafting pink roses on the black currant. Having no natural affinity, these plants can never form a vital union, however accurately they may be mechanically joined. The mode of grafting practised by different persons are numerous, but they all depend upon one principle, which should be well understood by every one who possesses a garden. No matter how skilful the operation of grafting may be performed, the results will be unsuccessful unless the stock and scion are nearly related, such as varieties of the same species, species of the same genus, or genera of the same natural order, beyond which the power does not extend. Much as is practically known with regard to the species and varieties that will agree with each other when grafted, there is still much to be learned which can only be acquired by long experience and observation. The influence of the stock upon the scion is often very marked. This chiefly arises from the stock supplying the scion with a greater or less amount of nourishment than it would receive from its natural root, and consequently producing a more or less vigorous growth. Too great a disparity between the nature of the scion and the stock should be avoided if a steady growth be desirable. It should be remembered that wood does not unite with wood so as to form a vital union in any case. After trees have been grafted for many years, it is found on dissection that between the portions of wood of the stock and scion, which were placed together at the time of grafting, no union has ever taken place; when all the wood subsequently formed is removed the parts previously joined can be readily separated, exhibiting two clean surfaces, or, occasionally, with a little dead cellular substance interposed. It is, therefore, evident that the pieces of wood already formed do not unite, however accurate they may be joined.

Whip or tongue grafting is, on the whole, the best and easiest mode of grafting, and the one most extensively employed for young trees in this country. It is represented at figure A, where 1 is the stock and 2 is the scion. It will be readily understood that the bark of the stock, because older, is thicker than that of the scion, consequently if, as ought to be the case, equal surfaces of the wood are exposed, the cut surface of the scion would not completely cover that of the stock, nor would this ever be the case, except when the barks of both stock and scion are of equal thickness. In proceeding to operate, cut the top of the stock in a sloping direction, as shown in the figure, terminating, if possible, above a bud. Then take the scion and cut it sloping and thin towards the end; next enter the knife and cut a thin tongue upwards, as shown in the figure. The scion is now prepared. Then proceeding to the stock, cut a slice upwards, so that the surface of the wood shall be as nearly as possible a counterpart of the exposed wood of the scion. In the upper part of the cut make a notch to receive the tongue of the scion; this notch should be kept open with the point of the knife while the scion is being inserted. The inner bark of the scion and stock should be placed in contact, the parts secured by tying with matting or other material and surrounded with clay, grafting wax, or other substances, to exclude the air and rain, then the operation is complete.



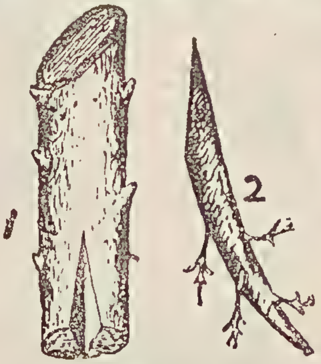
A—Whip or Tongue Grafting.

Cleft grafting is represented in figure B, where 1 is the stock and 2 is the scion. This is sometimes called triangular notch-grafting. Instead of splitting the stock a triangular notch is cut in the side, and in that the scion is fitted, so that the inner barks correspond. The scion is kept in position by tying matting or other material round it and the stock. It is then surrounded with clay, grafting wax, or other substances to exclude the air and rain, and the operation is complete.



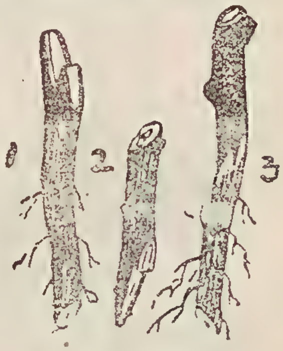
B—Cleft Grafting.

One way of root grafting is represented at figure C, where 1 is the scion and 2 is the root. There are other ways of root grafting, the tongue or whip graft being largely practised. See figure D, 1, 2, and 3, where 1 represents the root, 2 the scion, and 3 the graft complete. The scion should be tied, clayed, etc., as in those above referred to.



C—Root Grafting.

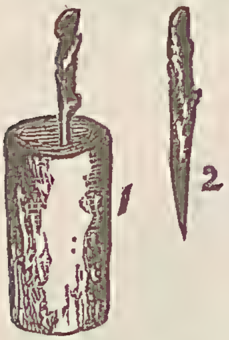
Crown or bark grafting is represented at figure E, where 1 is the stock and 2 is the scion. This mode of grafting is easily performed by anyone. The head of the stock is cut horizontally, and a slit where the scion is to be inserted is made just through the inner bark. The lower end of the scion is cut sloping as in whip grafting. A piece of wood, bone, or ivory, in shape somewhat resembling the thin end of the scion, is introduced at the top of the slit, between the alburnum and the inner bark, and pushed down in order to raise the bark, so that the thinned end of the scion may be entered without being bruised. The edges of the bark on each side are then brought close to the scion, and the whole is bound with matting and clayed. If so desired three or four more scions can be put into the head of a stock if it is a large one. On the whole, crown grafting is not so good as



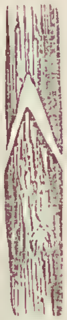
D—Root Grafting.

whip or tongue grafting, but it answers well for working superior varieties on such established trees as are not fruiting satisfactorily. Crown grafts are very liable to be blown out if care be not taken to cut the growths back, and support them in some way whilst they are young.

Saddle-grafting is sometimes practised (see Fig. F, where 1 represents the stock and 2 the scion). It cannot be satisfactorily carried out, however, unless the stock and scion are of nearly equal thickness. The stock is cut sloping on both sides like a wedge. The scion is split up the centre, and each half is thinned to make it astride the wedge-like end of the stock. The inner bark of the scion and and stock having been made to coincide as nearly as possible the parts should be secured by a ligature, and covered with some grafting composition, then the operation is complete.



E—Crown, or Bark, Grafting.



F—Saddle Grafting.

G—A Pyramidal Pear Tree Regrafted

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Is by Young Tipperary; grandsire, Tipperary.
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FIRST PRIZE, Adelaide Show, September, 1906.
FIRST PRIZE, Gawler Show, September, 1906.
FIRST PRIZE, Two Wells Show, September, 1906.
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Extract from THE REGISTER:—Among an excellent lot of ponies Mr. A. Brown's St. Elmo stood out prominently by defeating two hardened prizetakers in the entire class between 13.2 and 14.1 hands.

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Notwithstanding that some varieties of fruit-trees, especially pears, bear unsatisfactorily in some situations, many persons hesitate to do anything with them, and allow them to cumber the land for years without giving an adequate return. Should such trees be in a healthy condition, this state of affairs could be easily remedied by cutting the branches well back and grafting scions of good bearing kinds on them. Fig. G is a representation of a tree that had been subjected to the treatment suggested.

In cutting wood for scions the greatest care should be taken in selecting only those portions which are thoroughly ripening and have the buds well formed. The stocks, too, should be sound, vigorous, and healthy. Unless these things are taken well into consideration it cannot be expected that a healthy union will take place. Healthy scions that are grafted on unhealthy stocks, or vice versa, will never give satisfaction, no matter what attention is given to their cultivation.

When forcing produce of any description do not at once remove the plants from cool quarters to very high temperature; gentle heat is best at first.

One of Noah's.

She was an amateur poultry-keeper who took pride in her hobby. From her point of view no one in the neighborhood raised such fine birds or got so many eggs from them. Determined to give the coming guest a treat she killed off one of her finest and fattest fowls—an Andalusian—for dinner.

Dinner was duly announced, and the fowl made its appearance on the table.

The guest, being very polite, made no remarks. Not so the lady's husband, however.

"This fowl is uncommonly tough, my dear," he said, while the guest heroically tried to masticate a piece of the breast. "What is it—do you remember?"

"Oh yes, John," she replied, "I think it's one of those Antediluvians."

"So I should think," remarked the guest, throwing down his knife and fork in despair. "That accounts for it."

When forcing Roses keep a sharp look out for mildew on the plants; should the pest make its appearance at once apply flowers of sulphur.

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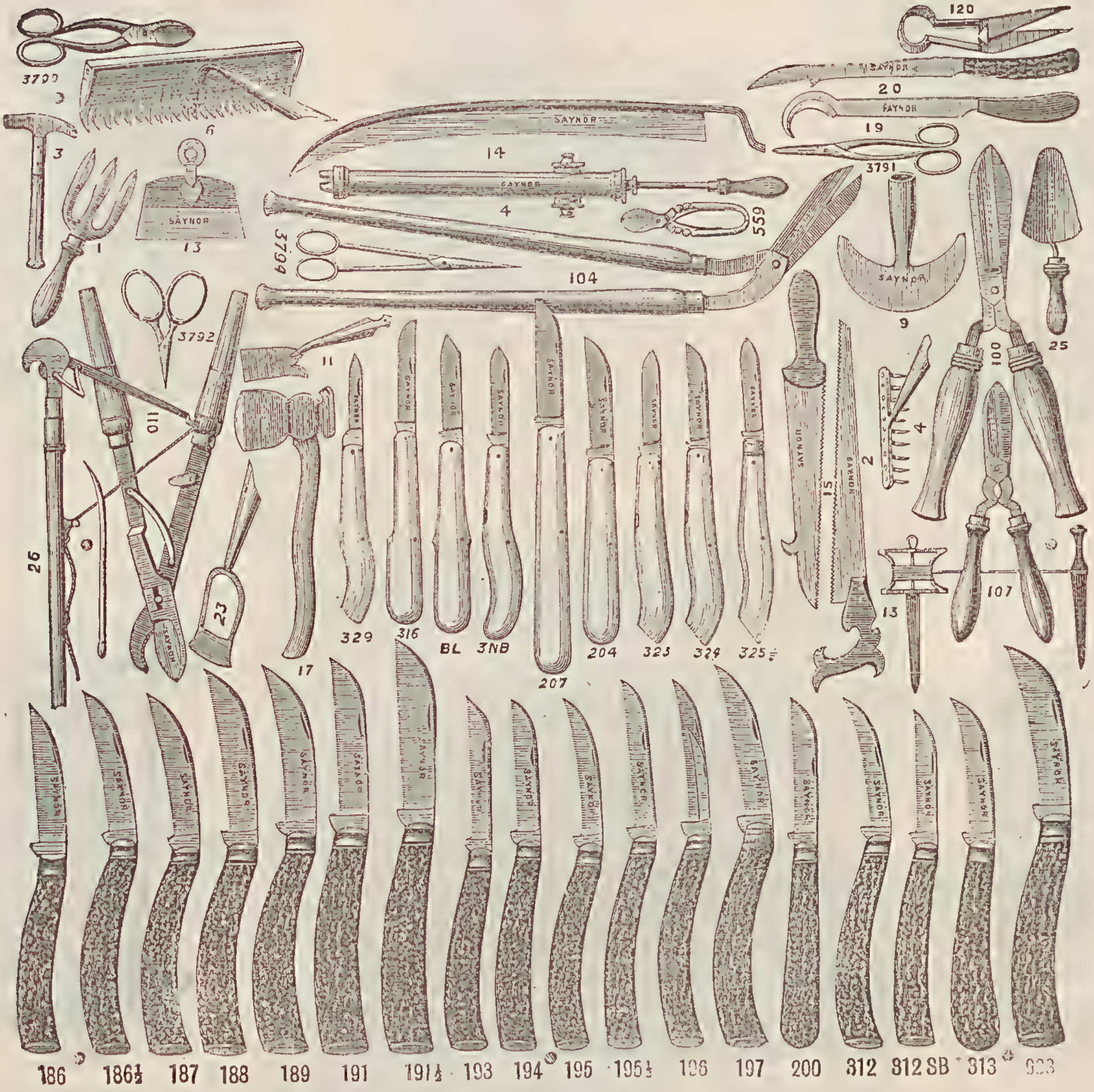

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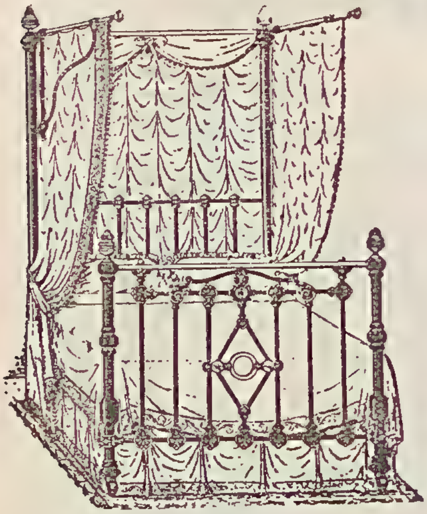

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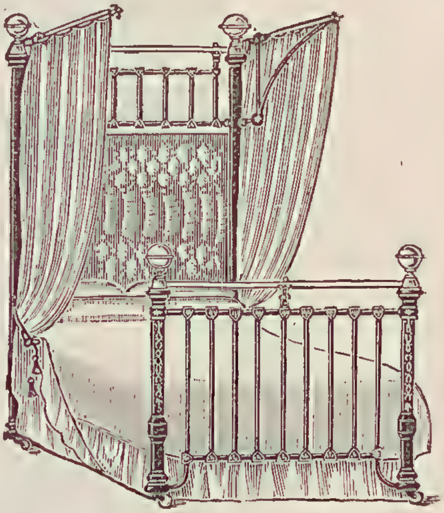

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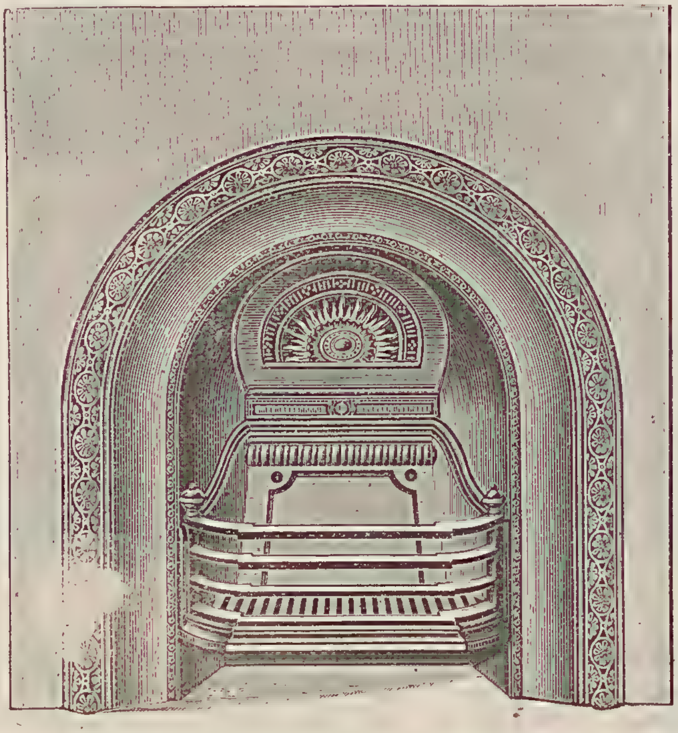

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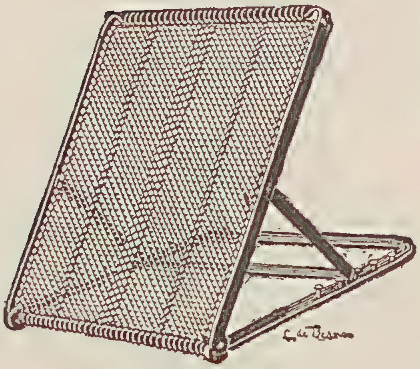
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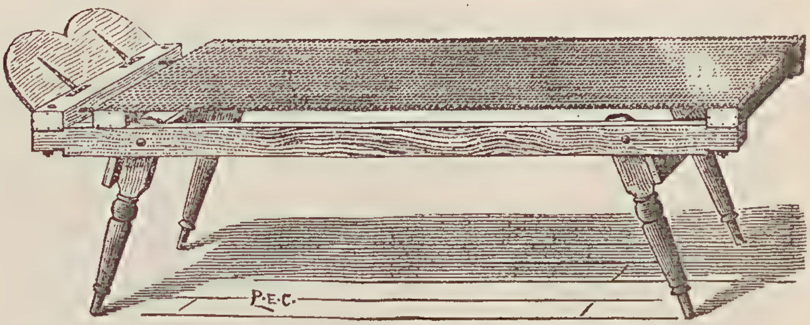

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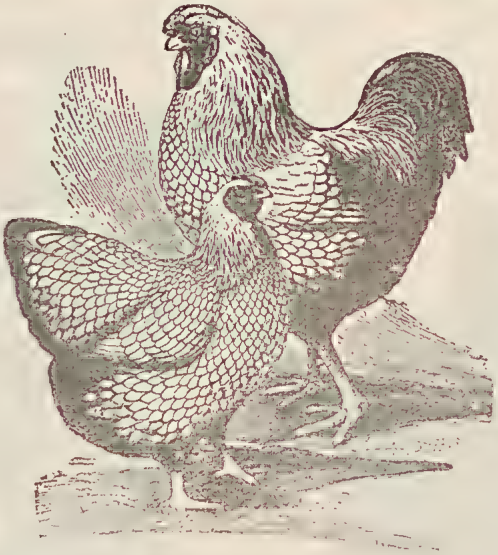

The Poultry Yard.

The Wyandotte.

(By Norman A. Axe.)

The Wyandotte is one of the best known and popular breeds, and one that by its all-round usefulness, beauty and merit has won its way to the very forefront of our present-day breeds of poultry. Although there are 11 different varieties or colors, it is my intention to only deal with the Silvers, Golds, Whites, Partridges, Silver Pencilled and Columbians.

It was about 1884 when first the Silvers were introduced into England, and with its beautiful, attractive plumage combined with all other good qualities necessary in an all-round fowl, it has steadily gone ahead and been bred to such a high standard of excellence till to-day it stands out a world-wide favorite amongst fancy and utility poultry keepers alike, equalled by few and excelled by none. I admit that there are other breeds, such as Game and Dorkings, that are better as table birds, and others, again, such as the White Leghorns, that have as strong a claim as layers, yet as a combination of the two there is no other breed that can equal it.

It is not my intention to make comparisons that are odious to those who keep other breeds, but I think I may safely claim without fear of contradiction that there is no other breed that is bred more uniformly to the standard laid down than is the Wyandotte. Although color and markings have the chief consideration from breeders, yet these are not cultivated to the detriment of all other points, as is the case with some Mediterranean breeds, where most other points are sacrificed for excessive combs and lobes.

In style and shape the Wyandotte somewhat resembles the Brohma, although it is distinctly smarter in appearance and has nothing of this breed's awkwardness about it. Its compact and cobby body, graceful arched neck, bold breast, short back and neat tail, give it a natural, proud carriage, and stamp it as the embodiment of vitality and vigor. From a fancy point of view the Wyandotte is all that a breeder could wish for. The number of its supporters is tremendous, and although prices have reached up to £185, £100, and £75 for a single bird of this breed, I have no hesitation in saying that it has by no means reached the limit of its popularity, and a few years will see it far in advance of its present-day rivals. From a utility fancier's point of view I think the following facts and figures are sufficient to convince anyone of its excellence and of its usefulness either to the farmer who has a wide range, or to the cottager who has only a back yard. The records of the various competitions organized and conducted by the English Utility Poultry Club form very interesting reading. I think the first competition was held in 1898, although of this and the one held in 1901 I regret I am unable to find records, but in the one held in 1899 we find Golds occupying third position, with a total of 133 eggs; in 1900 Silvers are first, with 223 eggs; in 1902 Golds are first, with 200 eggs, and Silvers sixth; in 1903 Whites are first with 276 eggs, which number constitutes a record, neither excelled nor equalled by any other breed in any competition of 16 weeks' duration ever held. In 1904, Whites again occupy first and second positions with 243 and 218 eggs respectively; in 1905 Whites occupy the third, fifth, and sixth positions, with 226, 187 and 180. In the present competition the results of the first four weeks are just to hand, and we find that in Section A, White Wyandottes occupy second and third positions, and in Section B, Partridges are first, with Whites third. Considering that these competitions are held in the most severe winter months and are open to any breed, the positions held and records established are very gratifying to us who are supporters and breeders of the Wyandotte. In a competition held in the sister colony of New Zealand, which concluded last December, the Silvers proved their superiority over all other breeds by occupying first, second and third positions.

General Characteristics:

As the general characteristics of all varieties are the same, I will give them here, the only difference being color, which I will give separately The male: Head short and broad; face, wattles and ear lobes bright red; neck, medium length, well arched and with abundant hackle; back, broad and flat; saddle, broad, and rising gracefully to the tail; body, short broad, deep and nicely rounded; breast, full and round; wings neatly folded and of medium size; tail full, neat and nicely rounded; shanks, bright yellow, perfectly free from feathers, medium length and stout. The female: Exactly similar in above points, allowing for difference in sex. It is good to have an ideal, but in striving to obtain this I would like to impress upon breeders the necessity of paying attention to the utility point, and endeavor by judicious selection to produce a harmonious combination of beauty and utility. The useful qualities of the Wyandotte must be maintained. It is the corner stone of their reputation amongst those who judge it from a utilitarian standpoint, so that in aiming at beauty of plumage we should by no means lose sight of the other part of the question.

I will now give a brief description of the different colors, and try to give a few hints on the mating and breeding.

The Silver Wyandotte.

It was in 1844 that the first Silvers were sent over from America to England, and if testimony were needed that breed has proved to possess all the good qualities claimed for it by its originators. It is worthy of note that the pioneers of its introduction into England are to-day a quarter of a century after amongst its most successful breeders and staunchest supporters. In 1891 my parents purchased for me a pen of this color, and, although rather young at the time, I can look back on a few years' experience and interest in the breed, and have noted the steady rise and difference in quality, particularly from the pen I first had and the stamp of bird I try to obtain now. In 1895 a pen of Golds was added, and these, coupled with the more recently introduced Partridges, are my favorites. The jet black lacing on a pure white ground of the Silvers forms a striking color, and breeders should note particularly in the stock birds that the lacing is as dense as possible, and not brown; that it extends right round the feather, and the white ground color is as pure as possible, and free from ticking or mossiness.

In mating, it is better to mate up two separate pens for pullet and cockerel breeding, taking for the pullet breeding pens hens as near perfection as obtainable. mated with a cock of pullet breeding strain, inclined to be laced rather than stripped on top, and possessing a soundly laced breast He should also have perfect wing bar, and be laced on the edge of every flight feather.

For the cockerel breeding pen procure a cockerel as near the ideal as possible, and mate with big good-shaped hens, good in head points, big and shapely. soundly laced on breast, with well striked hackle and black tail. A little mossiness in cushion is no detriment.

We have not as yet had the perfect bird (although some of the best in the old country come very near it), so I will point out what I consider the most serious and prevalent faults, and those to be guarded against by breeders. In the male, one of the chief failures is bad top colour and sootiness in saddle and hackle. This is one of the most difficult points to breed out, and fanciers should pay more attention to this, as nine out of every ten Silver cocks I have seen failed more or less in this respect. The back should be pure silver, and the hackle and sickles silvery white, with a black stripe down centre. A bird with black tipped or spangled hackle is to be avoided. Many cocks fail in breast, and a bird with a breast full of sound lacing from throat down to thighs and hocks is hard to get. Many that are sound up into throat run out at bottom of breast, and others, again, sound at bottom of breast, and well laced on to thighs and hocks, are black in throat. Most of these defects apply equally in the female, but the worst fault, and one that is very prevalent, is mossiness on cushion. Here, again, breeders will find a difficulty in producing birds entirely free from this.

THE GOLDEN WYANDOTTE.

The origin of the Golden Wyandotte is somewhat uncertain, and as it was some five years after the Silver that it was brought out, some say that it was produced by crossing Silvers with a breed known in America as Winnebagoes. Whatever their origin, there is no doubt that they are one of the most useful and popular varieties, and a more useful all-round fowl no fancier need wish for. In England there is always a ready market for good birds of this color, and as the advantages to be derived from breeding pure bred stock are more generally recognised, I think Golds will take one of the leading places, as the hot sun has not such a damaging effect on the plumage of the exhibition birds as on that of some other colors. The hens are first class, all the yeer round layers, and good sitters and mothers. The chicks are hardy and grow quickly, and the cockerels when fat are excellent table birds. The pullets mature quickly, and commence laying at from five to six months old. The eggs are a nice shade of brown, and although some people complain that they are none too big. what is lacking in size is made up in quantity. It is not necessary to go over the ground again in all details, as if a rich golden bay ground color is substituted for the white ground color in the Silver, the general characteristics are the same. The cock should have rich golden bay neck hackle, with distinct black stripe as in the Silver, and saddle hackle should correspond in shade. The wing bow and shoulder color should be a rich golden bay. bars and flights same color as breast, with lustrous black lacing; tail black; breast bright rich bay, with lacing as in Silvers; shanks bright yellow, free from dark shade or spots. The same description applies to female, with allowance for difference in sex, with back and cushion laced same as breast, and centres of feathers free from mossiness. A little latitude as to depth of color is allowed, providing it is the same shade all through, and the lacing clear and well defined. A great defect that appears in many of the strrins of Golds is a comb deficient in spike or pea comb, which I think was introduced by the breed being crossed with Indian Game to obtain depth of color. In selecting birds for the breeding pens, the same remarks apply in Silvers as regards lacing, but in Golds care should be taken that the ground color is rich, bright and even all through, and hens for cockerel breeding should be good in hackles, lacing on cushion haavy, giving rather a dark appearance, and a little mossiness in feathers is no detriment.

(To be continued).

Chicken Pox.

(BY H. V. HAWKINS.)

Numerous enquiries are reaching me concerning a disease not uncommon at this time of year—Poultry Favus—or what is usually known amongst poultry keepers as Chicken Pox. As the outbreak this year is apparently so widespread, it would appear opportune to briefly describe the symptoms and methods of treatment, as by neglecting the disease in its early stages the birds become emaciated and fail to respond to treatment.

One of the principal causes of this complaint is that of over-crowding in damp or filthy runs and houses. The disease usually attacks young birds, especially those hatched late. It rarely affects adult birds, and the breeds most subject to it are:—The Cochin, Brahma, Orpington, and Wyandotte, and very often those breeds which carry heavy combs, such as the Leghorn, Minorca, and Dorking. Many fine specimens of the latter breeds lose the tip of the spike, especially if the affected birds are not hobbled. The disease is one that greatly irritates, and the more the birds scratch the parts affected, the more rapidly do the spores spread, until the birds become a mass of sores, or, what appears to the casual observer, warts. The first symptoms which every amateur may detect are loss of appetite and a great thirst. The birds should at once be isolated ahd allowed no water for two days at least, and be given only soft food (pollard and bran moistened with skim milk) and plenty of finely cut raw onion.

Minute, pale yellowish spots, cup-like but irregular in form, appear on the comb, often on the wattles and at times on the eyelids. The latter are the most troublesome to deal with, and it is absolutely necessary that the birds should be hobbled. This can be done by tying a piece of tape around the ankle—the joint above the foot, and below the fourth toe—except those breeds having five toes such as the Favorelle, Dorking, and Houdan breeds; in these cases the tying should be between fourth and fifth toes so as to prevent the tape slipping up the shank.

Remedy.—Bathe the head and face with a weak solution of permanganate of potash. Make a paste of the following and apply to all parts affected:—Sufficient sulphur to fill a small pill box, enough boracic acid that will go on a threepenny-piece and five drops of eucalyptus oil with sufficient soft soap or vaseline to make a paste, mix thoronghly together and apply with a small camel hair brush. Do not allow the hands if cut or scratched to come in contact with the crusty wart. A good and safe preventive from contagion is to use an antiseptic, consisting of either a 3 per cent. solution of phenyle or lysol, in which the hands should be rinsed. All houses should be thoroughly fumigated with burnt sulphur and floors sprinkled with lime. With care there need be little to fear, but children should on no account be allowed to handle the fowls so affected, neither should any person with an injured finger, as the disease is far from pleasant. The irritation and sudden sickness which follow are very distressing. Four to five days will effect a cura when it will be seen that the crusts will fall off and the birds' appetites will return. A tonic in the water should at once be given, viz.:—To 2 gallons of water add 80 to 90 drops of sulphuric acid (poison) and 1½ to 2 ozs, sulphate of iron: allow same to remain a few hours, after which stir well and give all the birds on the farm as much as they will readily drink. This will prevent the disease spreading and will tone up the flock.

Although the complaint is not serious, yet if neglected it is sure to turn to that dreaded disease—roup—attacks of which ase more often fatal than any other ailment nf poultry in Australia. Damp houses are the primary cause: crowded yards, such as are often noticeable in our suburban aaeas, are also responsible for serious complaints, especially at this time of year. I would again remind cottagers of the absolute necessity of sweeping up the droppings daily ann of the urgent necessity of sprinkling lime about the yards: not more than twenty birds should be kept in a yard of less than 50 x 25 at least, the more crowded they are the less profitable will they become. Remember, that a few good birds of a noted laying strain will return a greater number of eggs than a large flock kept together, Thig has been exemplified over and over again at the egg-laying competitions throughout Australia. To those desirous of keeping a few birds to supply the requisite morning egg, I cannot do batter than urge them to secure a broody hen as soon as possible, and thus secure the early chick and immunity from chicken pox.

A World's Egg-laying Record.

Mr. W L. Williams, of Sunnyhurst Poultry Farm, Clarendon, should be in a happy state of mind : he has again won a laying competition —at Subiaco, West Australia, this time. In doing so he has established a world's record, viz. 1,494 eggs from six birds, laid in 365 days, the previous record being 1,481 eggs. Not only are we raising the record from time to time, but our breeders are so improving their strain that a 200-eggs-per-annum hen is becoming somewhat commonplace. When our farmers have a fair percentage of even 200-eggs-per-year hens among their flocks our egg production will increase by leaps and bounds. These six hens have produced eggs which, at the average market price of 8d. per dozen, are worth £4 3s. ; the cost of the six hens for one year's food should not exceed £1 10s., so that, at that reckoning, there is a profit of £2 13s, or nearly 9s. per hen. The actual profit will be very much more as the price for eggs is so good in West Australia.

To Correspondents.

" P. Simpson."—We can recommend Mr D. Lanyon's incubator as one of the best in the market. We cannot give you full directions how to work one, it would take too much space. If you write to his address, Rundle street Kent Town, he will forward you full printed instructions and other notes of interest.

PRINTING

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Send us along a trial order.

Destroying the Codlin Moth.

THE KEROSINE LAMP EFFECTIVE.

The following interesting letter has been received by Messrs Wilkinson & Co from Mr S. Cochrane Macky, of Davenport, America :—

Sir—In over fifty years' experience I never saw moths so plentiful in cultivations as during the past season. Even now, in turning over the soil one finds moths as lively as crickets On May 2, 1902, an extract from a letter received from California was published and from it I take the following :—What is believed to be an effectual method of conquering codlin moths has been discovered by C. R. Frasier, an experienced horticulturist of Walla Walla County. For several years since codlin moths began to damage the fruit crops of this State Frasier has been experimenting. Last year he succeeded in raising a splendid crop of apples and other fruits, while orchards adjoining his bore fruits that were badly moth-eaten. In an orchard of 35 acres he scattered 50 large tin kerosine lamps so made that chimneys were unnecessary. Each night during moth time the lamps were filled and lighted. burning until morning. They attracted to them millions of moths which were burned and destroyed.' It was twelve months since I recovered the above extract which I had mislaid after cutting it out, The difficulty was to get the right kind of lamp, as I considered the torch lights used by street bands generated too much smoke to be efficient It struck me that the lamp out of a ' Perfection' heater might better suit, so I borrowed one and tried it first for a couple of nights, afterwards for seven consecutive nights, and as your readers may possibly be interested in the result I will relate the method I adopted. The first two night's trial proved that the lamp was all that could be desired so far as burning with a good flame and a minimum amount of smoke, but I did not find as many burnt moths on the papers I had spread around the lamp as I had expected. For the seven night's trial I used a milk-pan 22 in. in diameter and 3 in. deep. In this I placed near the centre two bricks on their sides about 2 in, apart. On this the lamp was placed and then I put about 2 in of water in the pan and sprinkled about half a pint of kerosine on the water. The result was simply astonishing. as the tin was full of moths, which did not appear to be even singed. On the fifth morning the moths seemed to have been thinned so much that I decided to discontinue the experiment. But before doing so I decided to count how many had been caught on the previous night and to my surprise found 887 in the tin, so I continued for the seven nights as originally intended. The lamp I used was the largest size Perfection and I used nearly one tin of kerosine for the seven nights. Since then I have tried a smaller size Perfection lamp, and it does not burn more than half the quantity of kerosene, and would, I believe, give equally good results. I feel satisfied we will require to use something of the kind during the moth season here if we wish to conquer the insect pests in our gardens and orchards. The idea is really not new, as I am told the French have used fires and lamps for many years past during the moth season, the poor using the former and the gentry the latter.

Plant Notes.

Nasturtiums are exceedingly easy of culture and give satisfaction far in excess of what little attention they require would lead one to expect. The tall varieties are excellent for covering objectionable spots in a remarkably short time, good also for hanging from the edge of tubs or boxes. The dwarf varieties are well adapted for beds or borders. Either grown from seed sown in the greenhouse, or seed sown right in the open ground, they go ahead to fulfil their mission.

Lobelia cardinalis stands exposure much better than coleus or ochyranthes, and when it is desirable to plant something that will give a coler effect somewhat similar to the latter in exposed places Lobelia cardinalis will answer the purpose The flowers as well as the foliage are red, as the name denotes.

Phlox Drummondii.—Among the most satisfactory annuals for bedding purposes is Phlox Drummondii, especially the white. It flowers profusely all through the season and the flowers hold themselves conspicuously over the foliage that at a distance only a blaze of bloom is visible. A great many annuals are either so straggly or remain so short a time in flower that they are undesirable for formal beds, but among those that are otherwise constituted Phlox Drummondii is noteworshy.

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How to Produce Pure Milk.

In order to produce pure, rich milk or butter we must have clean, sunny stables, healthy, contented cows, a milk-house built for the purpose, and separate from all other buildings, and finally every pail, pan, can, cooler, separator, bottle cloth, and person that comes in contact with the milk must be absolutely clean—not clean enough or pretty clean, but clean.

There is a man who lives near Newburg, New York (says the "Country Gentleman,") who sells pure milk to a well-known retail dealer in New York. In order to have his milk pure, he goes to no end of trouble; in fact, some might be tempted to laugh at the precautions he takes. For example, the milkers are required to put on sterilised suits before milking, and to wash their hands after milking each cow. But what's the result? Why simply that his milk retails for 10d. per quart, while he receives about 6d. per quart at the milk-house door.

To answer the question of how cows, stables, and utensils should be cared for, illustrations will perhaps be the best, especially as the dairies illustrated are real ones, and are selling their products for top prices.

In Westchester Country is a large dairy farm, which for convenience is divided into smaller farms, all under one management. On each of the small farms there is a stable about 80ft. long by 40ft. wide, with a silo at one end and near by a hay barn. The stable is a one-story frame structure, with a cement floor and two rows of large windows, one on the west side and one on the east. The milk-house is close by, with a covered passage leading to the stable. Of course, there is no cellar, the manure being carried out daily to the fields. The inside of the stable is whitewashed twice a year. The cows are curried, wiped with a damp cloth, and their udders washed before milking. The bedding material is shavings, bought by the carload. Just before milking, the milkers wash their hands and put on white suits, which are washed every other day. The milk is immediately taken to the milk-room, cooled, put in large cans and carried over to the central dairy building, a mile away, where it is run through strainers and bottled and shipped to town, where it sold for 6d. per quart.

In Orange Country there is a dairy farm where a fine herd of sixty grade Jerseys is kept, and certified milk shipped daily to New York. The cows are all stabled in one building which has concrete walls and floor, the ceiling being of matched pine enamelled. All the stanchions and fixtures are of iron piping, so that the whole interior of the building may be washed down with a hose. The bedding material is shavings, and the manure is taken out twice a day and emptied dicectly into a wagon and carried to the fields. Just before milking, the cows are curried, sprayed with warm water, and each one wiped with a clean towel. Then the milkers put on sterilised suits and wash themselves before starting to milk. The milk is carried to the milk-room which adjoins the stable, where it is run through clean, sterilised cheesecloth strainers into large cans and then carried over a gravity trolly to the dairy building. Here it is cooled and bottled. All the utensils, including the metal milking stools, are sterilised twice a day.

In another part of the same country is a herd of some eighty cows, where the same clean methods are practised with the exception of spraying the cows. In this case they are simply curried, brushed and wiped with a damp cloth. The stable is in one end of a large barn, and while not up to date in its appointments, is kept scrupulously clean. Shavings are used for bedding, as this is one of the requirements of the New York State Milk Commission where dairymen are shipping certified or inspected milk. The milk from this farm sells for 5d. per quart in the neighboring city.

A Bill regulating the sale of butter in the United Kingdom has passed the House of Commons. It provides that the water percentage in margarine and butter is not to exceed 16 per cent. of moisture, but butter imitations may have as much as 24 per cent.

Why Dairying Pays.

It takes less fertility out of the soil than any other form of agriculture, and hence it is useful in following a well-regulated system of rotation.

It can be combined regularly with other forms of agriculture or horticulture.

The dairy provides in winter a quantity of stable manure in which the straw from the barn is profitably utilised.

The by-products from the cow—skim milk, whey, and buttermilk—are a source of income in raising pigs and calves.

Dairying gives constant and regular employment of a light character to every member of a farmer's family.

Dairying inculcates habits of punctuality, industry, cleanliness, and thrift on a farm.

Cheese and butter are condensed products, and the cost of carriage, in comparison with their value, is less than that of any farm product.

The demand for good butter and cheese on the world's markets is unlimited, and so long as the quality is maintained, an all-round, even, and profitable price can be secured.

The monthly cheque from the factory provides the mainstay in the household, as against the precarious returns from yearly crops.

In mixed farming, the income from the dairy is the most reliable.

The farmer's household, as a result of dairy work, is always supplied with fresh milk and cream, butter, pork, bacon, and veal.

Storekeepers, traders, bankers, financial men, and politicians all fully realise, after years of experience, that wherever dairy farming is conducted farmers are more prosperous, mortgages are rarely found, and the value of landed property becomes considerably enhanced.

Victoria ships about half the butter exported from the Commonwealth, and about 25 per cent. more than New Zealand. Last year New Zealand exported 8,145 tons of cheese at a value considerably in advance of that ruling for butter.

E. B. COX & Co., Seedsmen, Etc., corner Rundle Street and East Terrace.

September Number of 1907

The Australian Gardener

(A Monthly Journal of Floriculture, Horticulture, Agriculture, and Poultry),

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- Operations for August

Flower Garden—
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- Plant Notes.
- Propagation of Ornamental Nursery Stock

The Orchard—
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ANSWERS TO CORRESPONDENTS.

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The Poultry Yard—
- Points of the Bird.
- The Wyandotte (continued)
- Nests for Sitting Hens.
- Preserving Eggs.
- &c, &c., &c.

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All letters, manuscripts, and matter intended for publication should be addressed to the Adelaide Office, corner of Pirie and Wyatt Streets, Adelaide, and in order to appear in the following issue shou'd be posted to reach Adelaide by the 20th of the current month. It is necessary that correspondents should furnish their names and addresses.

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Particulars of rates will be supplied on application.

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EDITORIAL

THE September issue of "THE AUSTRALIAN GARDENER" is full of practical and interesting information to all producers from the soil. The less profitable but equally interesting occupation of gardening amongst the flowers receives a full share of reading matter. With flower gardeners this month occupies every moment of leisure that can be given. And to make the coming beauties rich in profusion lots of time must be robbed from other interests. But the industrious gardener is always well repaid for everything in the way of time, labour, and money that he puts into the beauty spots about his house Nothing is more gratifying to every member of a household and to all visitors and casual passers-by than a neat, well-kept, and well-stocked garden of flowers. Life without flowers would hardly be worth the living.

With this in view our plant notes and special articles on the violet and the pansy will appeal to our readers

We are reproducing from the 'Florists' Exchange' a very practical and interesting article on the timely subject of propagation of ornamental nursery stock. Begining with the method of the production of plants by the seed method the writer goes on with instructions in the stooling and layering system. Then follows the perhaps easier and more popularly known methods of working the plants from cuttings. Next is the more patiently yet more interesting nursing of plants under glass, and finally the most fascinating process of grafting. Once this method has been acquired by the amateur we know of no phase of gardening that is more fascinating. It is so easy, too. A few failures at the beginning only serve to make the successes more interesting, and so the charm lures on the patient ones to win from nature some of the choicest and happiest results.

In the Orchard this month there will be no lack of shining implements, hard hands, and back strengthening exercises. Laying out new ground and planting up should be well in hand, and we should advise very strongly those who are planting up new stuff to make their collection with a far away look in their eye. To find at the end of four or five years' patient time and labor that the wrong trees have been planted in the wrong places are results that break up a man's enthusiasm more than anything. Trees that do not take and have to be replanted are all in the fortunes or misfortunes of the orchardist to be borne with a light heart, but when a tree turns out a useless kind of thing after years of careful nursing it is exasperating Therefore selection of sorts that are likely to repay the time and labor are of the utmost importance. We have from time to time given specially prepared lists of all varieties that have proved themselves worthy of growing.

Our Poultry Yard observations are full of information in this quickly growing industry. An industry which has grown more quickly than any other in Australia, and one which will pay well when, like everything else, it is properly managed.

COMMERCIAL AND ORNAMENTAL PRINTING of every description in first-class style, on the shortest notice, and at cheapest rates, at the "Australian Gardener" Office, corner of Pirie and Wyatt streets.

The Vegetable Garden.

SILVER BEET.

TURNIP BEET, ECLIPSE.

Now is the time when the kitchen garden will richly repay all the labor bestowed upon it, for it is the month for sowing most kinds of vegetables. If the soil is not naturally rich, make it so by a liberal application of stable manure and compost, dig or plough the ground deeply, and afterwards keep the ground in good tilth about the crops. Water early in the morning or late in the evening, and stir the soil in the latter case early next day to prevent caking. Mulching with straw or leaves or litter will be of great benefit as the season gets hotter. It is a good thing to apply a little salt to newly dug beds. It is not exactly known what the action of salt is on the soil, but when it is applied as a top-dressing it tends to check rank growth. A little is excellent for cabbages, but too much renders the soil sterile and causes hardpan to form.

Asparagus.—Roots may be planted this month in the warmer parts of the State. Seedlings of such a variety as late Argenteuil, if planted now in good soil, may, as has been the case, produce stems in sufficient quantity and large enough to permit of some of them being cut for use. It is an exceptionally good variety and quick grower. Before planting asparagus, mix well with the surface soil a good dressing of farm-yard manure. When planting dig out a shallow trench, sufficiently deep and wide to permit of the roots being carefully spread out at the crowns of the plants to be covered with 2 or 3 inches of soil—not more. Old asparagus beds may be cleaned up, and be supplied with a dressing of farmyard manure. A dressing of nitrate of soda in the spring should prove beneficial. If this artificial manure is not easily obtainable try sulphate of ammonia. Say a handful of either of these to the square yard.

Beans, French and Kidney.—This section includes such varieties as the butter beans, wax beans, snake beans, and may also for general purposes include also the useful scarlet runners, for the cultivation of all these is practically the same. All these beans may be sown in the early and warm districts, where frosts are unlikely to occur again; but in the late and cold places there is a great risk in sowing.

Beet, Red.—Sow a row or two to keep a supply going. Make use of ground that had been well manured for cabbage or cauliflower or something of that kind, for the application of fresh manure for red beet is not a good practice. Sow the seed in drills about 18 inches apart and about an inch deep. If the soil is dry, water well and then cover the seed with fine soil. When the seedlings come up and have grown to be about 3 inches in height thin out to 9 inches or 1 foot apart. Cultivate the ground well during the growth of the beets.

Beet, Silver.—This can either be sown in a seed-bed and the young beets afterwards planted out, or it can be sown in drills about 18 inches apart and the seedlings thinned out to about 18 inches apart. The first method is perhaps the best, for but very few plants are required to be planted at a time, and these should last for some time.

Broccoli, Brussels Sprouts, Cabbage, Cauliflower, Savoy.—Seed may be sown in seed-beds in drills. Sow thinly. Prick out seedlings when 2 or 3 inches in height and transplant from former pricklings out to the permanent beds.

Celery.—Sow a little seed from time to time in order to keep up a sufficient supply of plants for putting out in trenches. When the seedlings have attained a height of 2 or 3 inches, prick out and afterwards transplant to heavily manured shallow trenches. Very few plants at a time will be required. The blanching should not begin until the plants are almost full grown.

Celeriac or Turnip-rooted Celery.—This kind of celery differs from the well-known variety inasmuch as the plants form a tuberous stem somewhat like a turnip, and this tuber is made use of either fresh or cooked. Sow a little seed and plant out seedlings of previous sowing if any have been raised. It does not need earthing-up or blanching.

Carrot.—Seed may be sown to any extent required during the month, for this is a good time to sow. Make a very fine seed-bed and sow in drills very shallow.

Cucumber.—Sow a little seed in districts where late frosts are not likely to occur. Plants may be raised in seed-bed, boxes, or pots, and when the plants have made a leaf or two beyond the seed-leaves they may be planted in well-manured ground. Shallow basins made in the soil an inch or two deep will be found useful in which to plant, where watering is necessary.

Lettuce.—Sow in seed-bed a little seed occasionally: prick out carefully seedlings and afterwards transfer to the bed where they are to grow.

Melons, Marrow, Squash, Pumpkin.—In warm districts any of these may be sown in the garden. In cold-climate districts seeds may be sown under protection, but it is still early in such districts where heavy frosts may occur until October.

CELERIAC (TURNIP-ROOTED CELERY).

Onions—Seed may be sown either in beds where the onions are to grow or in seed-beds where seedlings can be raised for planting out when large enough to move. The latter is the best plan for farm gardens. Any seedlings already raised can be planted out during the month in rows 12 to 15 inches apart, and in the drills the young onions may be planted about 9 inches apart. Make the beds rich with good farmyard manure.

Parsnip.—Seed may be sown largely during the month in ground that has been deeply dug. No manure should be applied directly for this crop.

Peas.—Be sure to raise abundance of peas to meet all needs before hot summer weather sets in in the warm districts.

Potatoes.—Plant a few rows of Early Rose or Kidney varieties. Avoid cutting into sets, if possible. Plant in rows about 3 feet apart, setting the potatoes about 6 inches deep and 1 foot apart.

Radish.—Sow a little seed from time to time during the month.

LONG PRICKLY CUCUMBER.

Rhubarb.—This vegetable may be planted in well-manured, well dug-up soil. Plant about 4 feet apart, and so deep that the crowns of the plants will be about 2 or 3 inches only below the ground when they have been covered with light soil.

Salsify or Vegetable Oyster.—Sow seed in light, rich, deep soil. Make the drills for seed about 15 inches apart, and when seedlings appear thin out 4 to 6 in. apart.

Tomato, Egg Plant, Cape Gooseberry, and Capsicum.—Seeds may be sown in beds, boxes, or pots during the month in warm weather.

EARLY SCARLET NANTES CARROT.

The blocks in the foregoing have been kindly lent by Messrs. E. & W. Hackett, Seedsmen and Nurserymen, 73 Rundle Street, Adelaide.

The Flower Garden.

GIANT TRIMARDEAU PANSY.

The Violet and the Pansy.

(By J. Cronin.)

The garden forms of violet and pansy have been derived from Viola, a genus of dwarf plants, mostly perennial in growth, species of which have been found native in many parts of the world. There is a great number of species of violas, but only a few are cultivated except in botanical collections. All are low growing plants, and naturolly occur in cool and shady situations.

The sweet violets, Violet odorata and its variety alba are natives of Britain, and are found growing in the fields and hedge rows. The present garden types of violets have been raised from this species, and while the flower has long been popular an account of its perfume and time of blooming, the interest in it has largely increased of late years owing to the improvement that has been effected by gardeners in increasing the size and introducing more varied coloring in the flowers and vigor in the plants, without diminishing the characteristic perfume. The single varieties in particular have been greatly improved. The double flowered violets have been produced form a variety of the common violet, Viola odorata var. pallida plena, the Neapolitan violet. The double types, though not as hardy as the single kinds, are also popular garden plants, floweing freely under suitable conditions. The flowers are delightfully fragrant, in many varieties the perfume resembling that of the wallflower. Violets thrive in the Southern and elevated districts of this State, but require some protection in the hot Northern districts, particularly where the soil is of a sondy nature. They endure a deal of heat if the soil at the roots is moiet and cool.

The violet succeeds best in a fairly heavy soil that has been deeply worked and moderately manured. An excessive quantity of nitrogenous manure will cause the production of an excess of gross foliage and very little bloom. The usual position assigned to violets is that of edging plants, for which purpose they are specially suitable. The single flowered varieties will thrive in any aspect excepting an excessively shaded one, but the double varieties require a rather shaded position unless the soil is cool and moist. Red spider is the principal insect pest of the violet, and is difficult to axterminate owing to its attacking the under surface of the loaf. When the plants are badly affected the leaves become yellow in color and should be cut off and burned; in the case of plants newly set out, the application of water is necessary.

Violet plants bloom freely for two seasons, after which they become weak and straggling in habit, and the flowers produced are poor and few. The plants should be renewed after the second year, fresh soil being necessary to insure success. Strong sturdy runners with roots attached should be selected, and planted either in the spring or autumn. The plants should be mulched with rotted manure early in summer.

The principal varieties are:—Double flowered: Neapolitan and De Parme, mauve; Marie Louise, lavender blue; New York, violet; Lady Hume Campbell, mauve; Count Brazza, white; Madame Millet, rose; and King of Violets, dark blue. Single flowered: Admiral Avellan,

Roses; All the leading varieties, half-standards, 1s. each

Fruit Trees; Orange, Lemon, Peach, Apple, Pear, Plum, etc

HARDY SHRUBS, Trees, Climbers, etc.

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WHITE VIOLET.

purplish red; California, violet purple; La France, violet blue; Italia, violet; Margaret, violet; John Raddenberry, pale blue; White Czar, white; and Princess of Wales, violet purple, the popular market variety, and the best violet in cultivation.

The pansy of to-day is a descendant of Viola tricolor, also a native of Britain. Like the violet it succeeds best in cool districts, but can be grown to produce its flowers during winter and spring in any part of the State. Pansies are divided into three sections, viz., the Show, Fancy, and Tufted or Bedding Pansy, the latter being also known by the generic name Viola. The show pansies are mostly self colored white, black, yellow, etc., and are of medium size. The most popular section here is the fancy pansy, the plants being stronger, and the blooms larger and more varied in their colorings and markings than the show varieties. The fancy pansy is of Continental origin and has been greatly improved of late years by English horticulturists. The tufted pansies partake more of the character of the show pansy than the fancy, but are hardier than either, enduring a deal of summer heat without injury.

The pansy thrives best in a fairly porous loam that has been deeply worked and enriched. Heavy dense soils need an admixture of sand, grit, or ashes, to make them sufficiently friable and porous, while light and sandy soils will be rendered more suitable by the addition of clay or strong loam, and cow manure. Although a perennial plant the pansy is usually treated as an annual.

The increase of specially fine plants is effected by striking cuttings—produced in the centre of the plants after blooming—in sandy soil in a cold frame, or by dividing the plants. Generally a fresh batch of plants is raised from seeds each season in most parts of the State. The plants are nearly certain to be attacked by red spider during summer, and it is considered more profitable to destroy the plants and raise a new supply from seeds, than to attempt to cope with the pest. To raise plants that will begin to flower early in winter, the seed should be sown about the end of January in boxes of light soil placed in a sheltered situation or cold frame. The seedlings may be transplanted into beds and sheltered during very hot weather until the autumn, when they should be planted in their flowering quarters. The position selected should be open and sunny, the edge of an exposed border being suitable. Seeds sown in the open ground during winter or spring will produce plants that will bloom during summer and autumn if the position selected is sheltered and moist. Plants intended for late flowering should be mulched and liberally watered during summer to promote growth and check the red spider. Several strains of pansy seeds are offered for sale by local seedsmen, one of the best being Bath's "Empress," a noted strain of fancy pansies.

Plant Notes.

DAHLIAS are good for cutting, are decorative in their growing state; they are interesting in their variableness as well as sometimes surprisingly novel in the product resulting from seed saved from plants grown even on the premises the year before.

ANTIRRHINUMS—Among what are gene-more serviceable to florists through the rally termed common flowers there are few Summer than antirrhinums; in fact a florist possessed of taste and good judgment often makes up a piece composed for the most part of antirrhinums equal to that made up of far more expensive flowers. Antirrhinums do pretty well in any kind of soil, but to get good long spikes they require to be planted in rich soil.

BEGONIAS.—There are few plants with which it is so necessary to be careful that they are hardened off thoroughly before planting in the open ground as begonias. If they are not so hardened they will in all probability blanch and wither in two or three days after planting. They may

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come up from the root again, but it will take them quite a while to amount to anything. Begonia Vernon is dwarf enough to be used in conjunction with alternanthera in formal bedding or in beds of geometrical design. After a week or two exposed to the sun the foliage of the begonias assumes a bronze color in keeping with the effect produced by the other kinds of plants used. Lobelia is also suitable for the same kind of work. There is occasional complaint of it damping off, but if Crystal Palace compacta in single plants out of pots is used there will be but little danger of damping. Pyrethrum is another good plant for this kind of work; it will stand shearing just as well as alternanthera, and in color it is such that there is nothing else to equal it, although the yellow alternanthera may be better for general effectiveness. There are very few bedding plants that invariably give so much satisfaction to the planter as Begonia Erfordi. When small at planting they do not to all appearance seem to amount to a great deal, but when planted either in beds or borders in fairly rich soil they develop in a remarkably short time into large plants carrying beautiful pink flowers in gorgeous abundance. This refers, of course, to the true B Erfordi, which is pink. From the time the plants grow to meet one another in the beds until cut down by frost they never look patchy, being always covered with bloom.

Cinerarias when well grown are well worth the trouble necessary for their successful cultivation, but like many other things if they are in any way neglected they are almost useless, and seldom pay for the labor expended on them. The most essential point in the culture of cinerarias is to keep them growing uninterruptedly from start to finish, never to let them get potbound until they are in their last or flowering pots. Equally important perhaps is the keeping of them in as cool a temperature as possible when growing on, and in order to do this the plants when in pots should be grown in a cold frame on a bed of ashes, with the sashes sloping to the north. The seed should be sown in shallow pans over a filling of sand, loam, and leaf mould in equal parts, pressed firmly. The seed should be scattered thinly over the surface and covered lightly with sand and then watered carefully with a fine rose. Place the pans in a cool place immediately and attend carefully to watering until the seedlings are above ground and fit to handle, when they may be potted at once into the smallest size pots obtainable, using soil for the first potting of the same materials and proportions as for the seed. But in subsequent potting, soil composed of two-thirds good fibrous loam and one-third of sand with a good sprinkling of sand added will suit them better. For the last potting it will be very beneficial if only a little leaf mould is put into the compost and in its place is afforded well-rotted cow manure without sand. When there is danger of allowing the plants to remain longer in frames, they should be brought into the greenhouse, still kept cool but somewhat moist with an occasional aid to the circulation of air by a little fire heat, especially in very damp weather. The temperature at night should not exceed 48 degrees, allowing a rise of about ten degrees with sunlight. When the flower buds appear applications of liquid manure will help the plants; but it should be rather weak, or else use the precaution of watering immediately after with clear water. Cinerarias are subject to greenfly, but the plants will stand fumigating mildly. Tobacco stems scattered among the pots will act as a preventive, also.

Hybrid Calceolarias.—The cultivation of hybrid calceolarias is not difficult, but it is absolutely necessary for the production of good plants to keep them growing without the least check from the time the seedlings are pricked off until they have outlived their usefulness The seed should be sown in shallow pans filled with soil composed of leaf mould, sand, and fibrous turf; the top portion of the soil should be run through a very fine sieve. Before filling, the pans should be provided with ample drainage. As the seed is very fine no soil is necessary to cover it, but it will be well to water the surface of the soil in the pans before sowing the seed, which may be scattered evenly on the damp surface after the water has drained away sufficiently. Cover the seed pan with glass, and it should be kept covered and the covering removed only when the soil needs watering, which should be done by dipping in a pail or tank of water, so that there will be no danger of disturbing the seed in course of germination. When the little plants are easily discernible the glass may be removed from the pans, and when the seedlings can be easily handled they should be pricked off into flats, about an inch and a half between the plants. They may remain in the flats until they show signs of crowding, when they will require to be potted into the smallest size pots, using less sand and leaf mould and more fibrous loam with the addition of a reasonable portion of well-rotted cow manure, and continuing to increase the sustaining nature of the potting material with each successive shift. Calceolarias will not at any stage of their growth take kindly to the full sunlight but a thick shading is not what they want. Rather place them if possible in a situation where they can have adequate light, such as a northern exposure of a house or frame affords; in fact, a cold frame is just the place for them during a great part of their growing period. A cool temperature is essential to their proper development, just as careful watering is necessary to bring them to perfection. They can be flowered in 6-inch pots, but 7-inch pots will give better results. Liquid manure, when they are beginning to show flower, helps them considerable. When the plants are fully grown they should be placed so that the leaves of one do not touch those of another. Greenfly if allowed to attack them will soon ruin them; the safest preventive is the distribution of tobacco stem liberally around the pots.

Fuchsia procumbens.—As a basket plant or for window box culture the graceful trailing Fuchsia procumbens is one of the most desirable. The interesting little flowers are followed by large bright red fruit. The plant when not in bloom has a close resemblance to Muhlenbeckia complexa. Grown with Asparagus Sprengeri, it is very effective

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The Propagation of Ornamental Nursery Stock.

By W. H. Wyman, Mass., U.S.A.

Trees of all kinds, fruit, deciduous and evergreen, are ornamental; but these will be eliminated in this discussion although for the most part they are propagated precisely as are those popularly known as ornamental stock, viz., broad-leaved evergreens, deciduous shrubs and herbaceous plants. All the types of broad-leaved evergreens are raised from seed, while hydrids are propagated by budding or grafting the seedlings, or by the means of layering. The latter is the slower of these methods and is less frequently adopted by commercial nurserymen. Not to any considerable extent are rhododendrons grown in America. In Holland, Belgium and England, so far as our observation goes, all hybrids are grafted, for the most part, on ponticum seedlings of about two summers' growth. This is done in winter, under glass. In the spring they are planted out in beds, again to be transplanted a second time into nursery rows and third year they are sufficiently large for sale. Our chief interest is in the propagation of deciduous shrubs and herbaceous plants

Deciduous Shrubs and Herbaceous Plants.

Of the various methods of propagating this class of stock the following should be mentioned as the most general: By sowing seeds, the seed method layering, cuttings, both hard and soft wood: by division, and by budding or grafting.

Of all these methods the first is the most natural, but it can be adopted only so far as the propagation of types is concerned. The seeds of all hybrids cannot be relied upon, only to revert to their original types. For example, Ligustrum Regelianum seeds as profusely as the ibota, the type from which it sprang, but the seedlings will all be ibota with possibly some variations, but never Regelianum.

While the seed method of propagation is the most natural of methods we believe it one that requires as much painstaking study as any. Over against this in the order of naturalness is the stooling or layering method, the simplest or least difficult of any, but not much in vogue in this country, because it is too slow for commercial purposes. In Europe shade trees are to quite a considerable extent produced in this way. The advantage is uniformity of excellence in quality while seedlings admit, in some cases, of great variations. While we believe it to be true that in this country little ornamental stock is produced in this way, the writer is acquainted with one firm of repute who grow Hydrangea paniculata grandiflora in quite considerable quantities by this method. They are a marked exception to the general rule.

The Seed Method.

It is our opinion, that while the seed method is the most natural it is, as before stated, as difficult of mastery as any of the methods of propagation. The first step in seed propagation is the procuring of the seeds. Then they must be properly treated. If the seeds are easily separated from pulp or chaff like those of Syringa japonica there is little to be done; simply to put them into a cool place safe from the ravages of mice to await the day of planting. They must not be allowed to become too dry. If the seed is encased in pulp, it is best that it be thoroughly washed out and stratified or planted immediately. Which of these two methods is the better it is impossible to say. We would reommend whet we have learned by experience—the planting of a part in the Fall, and the stratifying of the remaining half for Spring planting.

Advantages of immediate or Fall planting are these: So much work is out of the way. A small matter. Secondly, the seeds are in the ground ready to begin germination at the earliest possible moment. If nothing happens to injure them, the seedlings will be better and larger than will be the case if in the Spring the seeds are not sown at the earliest date praticable This method is beset with dangers, first that field mice and moles will find the bed a very desirable habitation for the Winter, with the result that the seeds eaten up. Then again, there is another danger which must not be overlooked, though it may seldom, if ever occur. In the Fall of 1905, we planted all of our seeds of the various types of roses. Ordinarily, we had a right to expect a fine lot of rose seedlings the following season, but to our surprise, there was only one where there should have been a thousand—an absolute failure The fault was not with the seeds we feel confident, but with the season, In February of that year we had an unusually mild spell of weather lasting for several days with the result that deciduous trees began to make new foliage. This was followed by very severe weather It is most probable that the seeds felt the warmth of the sun and germinated only to have their little life ruined by the cold, This is a danger that may seldom arise, but as it has arisen once in our experience we think it a matter that is deserving attention.

On the whole the safest method is to stratify the seeds. The danger attending this method is that the seeds will not be taken from their hiding place as early as it is necessary, and germination will already have begun and to such an extent as to render the whole mass worthless. This danger attends only those seeds that germinate in the Spring following their ripening the previous Autumn, such as the barberry, sambucus and evergreen seed. But there are some other seeds, like those of viburnum opulis and clematis paniculata, that will not germinate in the spring, but will do so later in the season, about September. These may or may not be planted until the last of August. If planted they must be kept screened and not allowed to dry out. If not planted they may remain stratified until they are about to germinate, when they may be planted. Then there are those seeds that require two or more years in which to begin growth like those of the Viburnum dentatum, Viburnum cassinoides which should never be planted until the late Autumn following the year of their growth. And again there are other seeds, like those of Rhus aromatica, that will send forth some plants the first year, more the second and still others the third year. Such seeds are the most troublesome of any with which the planter has to deal, when one has learned all the peculiarities of the seeds he has by no means mastered the situation.

Most seeds require a rich sandy loam so light and friable that it will not bake. It must not be too dry or the little seedlings will burn, it must not be too wet or they will damp off, For the best results screening is absolutely necessary in the climate with which the writer is acquainted, say New England

Thus far all that we have said applies

to propagation out of doors without glass. in frames screened with ordinary lath screens. Azaleas, kalmias and andromedas we believe cannot be very successfully grown in this way. They should be sown under glass upon clean sphagnum moss where the humidity desired may be carefully maintained

Here, allow us to remark that other things being equal, the man who has land well adapted to growing of seedlings will succeed, while the man who has not suitable land had better let deciduous seedlings alone and devote his attention to something else.

The Stooling or Layering Method.

A word relative to the stooling or layering method in additton to what has already been said will suffice. Every tree or plant has its own peculiarities. Plants are capricious. Some will lend themselves to one method of treatment and others to another. There are some verieties of ornamentals that can be more successfully propagated by stooling then by any other method. For example the large flowering magnolias. The types can be raised from seed, but the Chinese varieties must be propagated in some other way. While we have seen the types raised from seed very successfully, we do not know of any firm in this country who has any considerable number of good stooling plants of magnolias. Why it is so we do not understand unless it be that the most of the growers are like ourselves, too young or too ignorant about the propagation of this class of stock to get good stooling plants. So far as our observation has gone, all the leading nurserymen in Holland have their stooling plants carefully planted and as carefully tended and a crop of young magnolias coming on each year. These are planted at a distance of about twelve feet apart. The same is true as before mentioned of limes, elms, Norway and silver maples and many other varieties of trees, It is readily seen that once a specimen tree has been found and the same has been stooled, the entire product will be of uniform excellence.

By Cuttings.

The next method of propagation is by cuttings, both hard and soft wood.

This we believe is the most general method of propagation in this country. A large number of common shrubs lend themselves easily to this method of treatment such as the cornels, privet, spiræas, for the most part and many others.

Hard wood cuttings should be made from wood of the previous Summer's growth cut from the stock plants after it has thoroughly ripened out, but before it has been subjected to a too low degree of temperature. This wood should be packed away in sand or moss where it will neither rot or become too dry, At the convenience of the propagator the wood can be worked up into cuttings which are usually tied into bundles of one hundred each, and again packed away where they callus preparatory to root-making, when they are planted in the open.

In latitudes where it is very warm and the soil is light as it is in France, it is necessary to plant these cuttings under bell glasses in the field, but we have never seen anyone propagating in that way in this country. It is the general method in France.

There are some varieties that cannot be worked by the hard wood method. They will only root from soft wood, or at least take most kindly to this method such as Philadelphus coronarious aurea, the forsythias, Hydrangea paniculata grandiflora weigelias, viburnum plicatum and many more. Here care must be exercised in taking the wood when it is not too soft or too hard: that is, when it will break short and crisp like a slender piece of burned clay, but not when so tough as to bend double without breaking The cuttings should be made larger than many propagators make them, we are convinced, just as large as they can be made from the wood in hand. They must not be allowed to wilt before or after planting in the frame, which may be with or without greater heat,

On this point opinion appears to differ. From our observation we don't believe bottom heat necessary. We know of one firm of very successful propagators who strongly advocate bottom heat, such as may be had by putting fresh horse manure in the frame pit under the sand.

We also know of another equally successful propagator who never uses bottom heat and says it is not necessary.

His product is just as good as is that of the other firm. When doctors disagree what are we to do? Judge each man for himself and act accordingly.

We are now at the critical point in soft wood propagation after the first cuttings have been well made and properly set in the frame. An even temperature of hot humid air must be maintained. Here the genius of the propagator comes into play. Rules only in the most general way can be made. There must be water enough but not too much, and when the rooting process is well under way, they must be hardened up by letting in some air, but not too much at first. The eggs in this basket must be carefully watched or the whole will be a failure. We are convinced that this is the point where the genius of the plantsman is tested as nowhere else in the whole round of propagation.

Not every man can be a successful propagator is our firm conviction.

A good propagator is a born propagator Experience perfects him, but he is not a manufactured product.

Propagation under Glass.

It may be necessary to note in passing that certain plants can be most successfully propagated by soft cuttings grown from forced plants under glass This applies to a few deciduous shrubs and to many herbaceous plants But the bulk of herbaceous plants are raised from seeds or propagated by divisions

And this brings us to the simplest of all methods of propagation by division. Any one can do this. It requires only a few plants to start with, which can be broken up and planted to become salable plants in three months' time.

Incidentally, it must be said that a few ornamentals, such as amygdalus and a few herbaceous plants, like oriental poppies and phlox, can be most easily and profitably propagated by root cuttings.

Grafting and Budding.

The last and final method of propagation we shall mention are the methods of grafting and budding. So familiar are these methods to every gentleman present, that no word that we can offer will be of interest. One observation we have made in foreign nurseries, especially in Holland, was this. It seemed to us that if a plant could be produced by grafting then grafted it must be, so fond are they of grating or budding. In this country quite the opposite is true. If a tree can be produced successfully in any other way it is not done by grafting or budding.—'Florists' Exchange.'

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The Orchard.

Planting operations should be completed If delayed too long the young trees will not get fairly established before the dry weather sets in, when they will make but weakly growth Pruning also should be finished as early as possible this month, otherwise if delayed until the sap begins to rise and the trees to swell the trees are weakened.

It will be necessary to use the spray pump in order to deal with mussel scale and red spider. The latter insect does far more injury to the tree than many orchardists suspect. It can be observed on the underside of the small branches and fruit spurs, appearing red like brick dust. Kerosene emulsion and red oil are about the best remedies to destroy it. The red oil should be made into an emulsion as follows:—Take an empty kerosene tin, put in a gallon of soft water and bring it to boil, dissolve 1 lb. soft soap in it, take the can off the fire and add 1 gallon red oil, place on the fire again, and stir continually until it just commences to boil. Then lift off the fire and work it through a small spray pump for a period of not less than three minutes and make up with cold water to 15 gallons. It is also necessary that a complete emulsion should be formed, otherwise the free oil floats on top and comes through the spray pump at the last, with the result that it will most certainly kill tree and branch where it comes in contact.

Peach trees will require spraying for black aphis. The old remedy, tobacco and soft soap, is about the best to use. Put 1 lb. of tobacco in a tub and pour four gallons of boiling water over it, cover it over and allow it to infuse for an hour or two. Then dissolve 2 lb. soft soap in 2 gallons of water, add this to the tobacco water, and make up the whole to 20 gallons of spray. Kerosene emulsion is also good for the peach aphis. Where the trees are badly affected with the aphis they should be sprayed every week to keep it well under.

Strawberry plantations may still be renewed; clear off all the runners in the old beds, and dig or plough between the rows. Raspberries and gooseberries may still be planted, but it is not advisable to plant too late. Old and worn out trees provided the roots are healthy, can be renewed by cutting them well back; they will soon shoot again with renewed vigor. If the present varieties are not suitable for market requirements, the trees can be regrafted early this month with varieties better adapted to locality or for market purposes.

A sharp look out should be kept for the appearance of woolly aphis, and should any trees be found invested, they should be carefully pruned, removing and burning as many of the infested twigs as possible. Then either scrub the trees thoroughly, using a strong kerosene emulsion, or fumigate with hydrocyanic acid gas, so as to eradicate this pest if possible.

All bark should be scraped from apple, pear, and quince trees, and the scrapings burnt, and everything in the orchard which would be a harbor for codlin moth destroyed. Keep all fruit-houses as clean as possible, as there is no doubt that they are responsible for harboring a great many moths every year Therefore, keep the rooms as airtight as possible, and as soon as the moths begin to hatch in the spring, burn sulphur fumes in the rooms once every other day for a fortnight, so that the moths may be destroyed as they begin to fly.

In working around vines keep a sharp lookout for the pupæ of the vine moth If there are any old, partially-rotted stakes, the moths will be found adhering to these, and also to the old bark which is hanging to the vine. Crush these whenever found, and thus assist in keeping down this pest as far as possible.

The Commonwealth Administration, in its anxiety to assist the man on the land, has placed a duty of 1/6 per 100 super feet on undressed timber. Before the new duty came into force fruit-cases cost 10d. each. Now, however, orchardists will be fortunate if they are able to procure them for less than 1/ each. Large wheat-growers, who can better afford to pay for the bags in which they send their produce to market, are allowed to import chaff, corn, and wheat sacks without duty. Then when the orchardist requires soda crystals for spraying, and rubber hose with which to apply the mixture, he must pay a duty of 1/ per cwt for the former, and 25 per cent. ad valorem for the rubber hose, which will not make it easier for him to comply with the Vegetation Diseases Act, The tissue-paper which he used to wrap round his fruit intended for export must also, unless imported from the United Kingdom, pay a duty of 5 per cent. These are some of the particular disadvantages. Like the general consumer, he will be asked to pay more for nearly everything he wears or uses, and his export freights will not be lessened when the tariff, by prohibiting trade from abroad, makes it necessary for vessels to come here in ballast or with light cargoes to take away Australian produce.—'The Australasian'

Watch for dodder in your lucerne this year. If you find a spot, cut it all out and burn it. That will kill the dodder seeds and spores. Better kill the lucerne on that spot then have the dodder spread over the entire field.

There is a faculty of judgment, of seeing, of comparison, that can be acquired only by experience, Books and periodicals are efficient helps, but actual contact with the business in all its details is the key to success.

Do not waste the potato peelings, they are the best part of the potato and make good poultry feed.

Food Requirements of Hybrid Climbing Roses.—A recent part of "Journal de la Societe Nationale d'Horticulture de France" contains a paper by M G. Truffaut on the food requirements of hybrid climbing roses. The author chose for his various experiments the sturdy and well-known rose Madam Ulrich Brunner and with the assistance of M. Cochet-Cochet aad other growers was able to work on a large scale. The results obtained by the various food-constituents are summarised as follows:—Tho mixture of nitrates and phosphoric acid produced very fine growth, extra large flowers early, and well colored. Complete manured poor in potash yielded excellent results, even in soils rich in nitrogen and in phosphoric acid. Roses should be grown in clayey or in clayey-siliceous soils, not over rich in humus, I advise, says M. Truffaut, for manuring roses in the open ground in Autumn, a little cow manure, and in Spring to spread on each square metre (rather over 3 feet) 50 grammes of precipitated bone phosphate, 30 grammes of burnt horn, 10 grammes of dried meat, 10 grammes of dried blood (1 gramme equal to 15.4.324 grains). The whole to be forked in. Then, after June 15, the plants should be watered with a solution of 1 gramme per litre (1 litre equal to 35.2,154 oz) of the following mixture:—50 per cent. phosphate of ammonia and 50 per cent. nitrate of ammonia; this gives 23 per cent. of nitrogen and 22 per cent. of phosphoric acid. By following these directions, by appropriate pruning, and leaving a moderate number of flowering shoots, bloom will be maintained until November, the flowers being large and fragrant, the stems firm and branching, the foliage dark green and shining, thick, and resisting rust and mildew.

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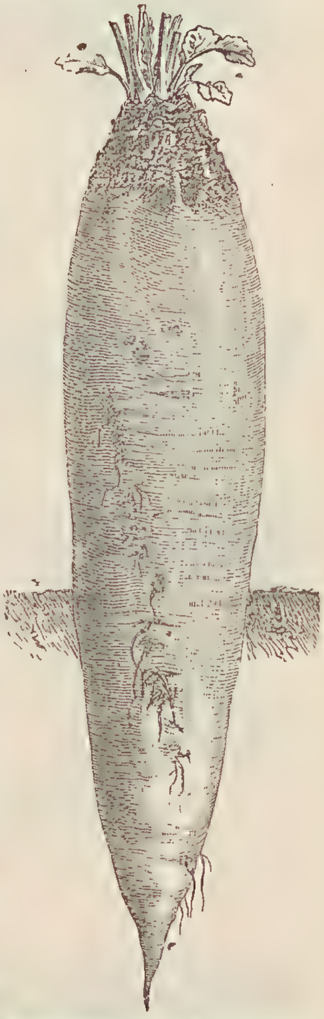

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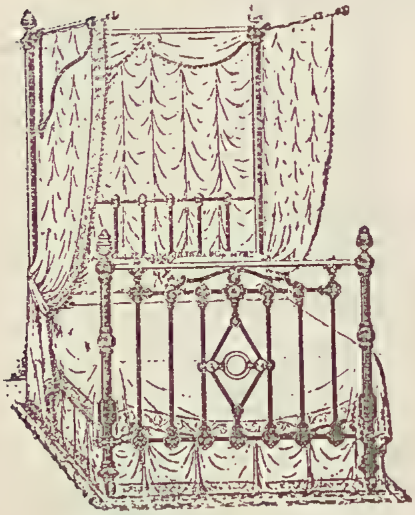

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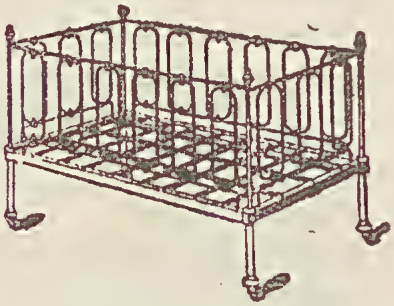

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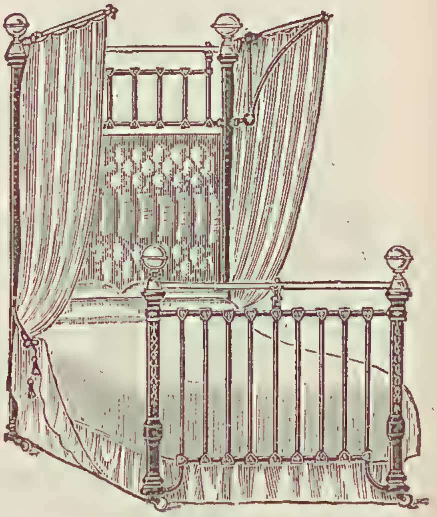

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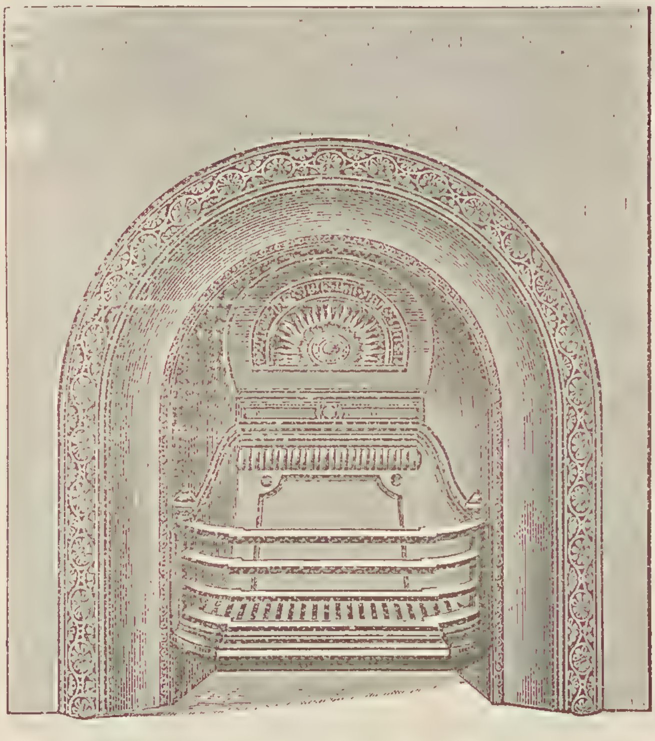

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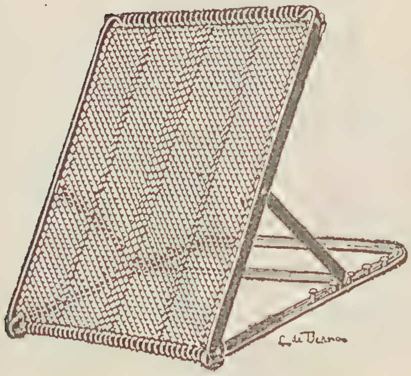

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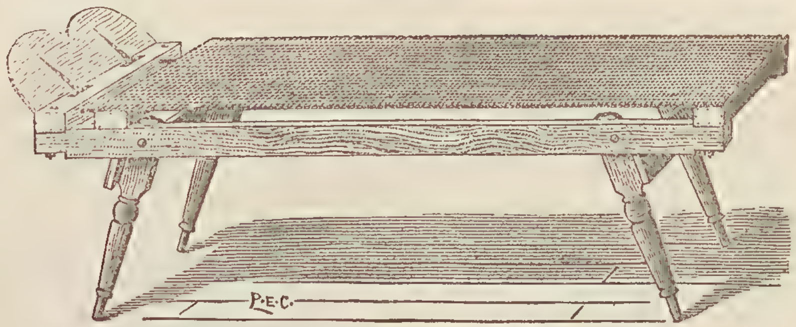

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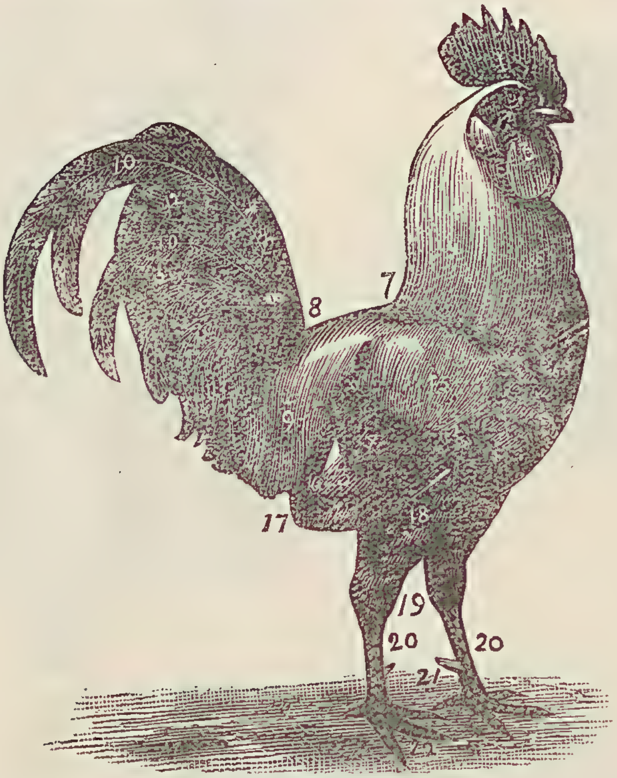

THE VARIOUS POINTS.

1. Comb (single)
2. Face
3. Wattles
4. Ear-lobe
5. Neck hackle
6. Breast
7. Back
8. Saddle
9. Saddle Hackle
10. Sickles
11. Tail Coverts
12. Tail Quills
13. Wing Bow
14. Wing Bar
15. Wing Bay
16. Wing Butt
17. Flights
18. Thighs
19. Hocks
20. Shanks
21. Spur
22. Toes

The Wyandotte.

(Continued).

[By Norman A. Axe.]

The White Wyandotte.

There is nothing mysterious about the origin of this variety, as they are purely a sport from the Silver. Many fanciers for a time spoke disparagingly of them, through this, but far from being to their disadvantage, it is in my opinion the opposite. They are tamer Wyandottes than some of the varieties. The White has made a great name in the utility world, and from the high positions they have occupied in the laying competitions held during the last few years, if there were such a title as champion layer I think it might aptly be bestowed on the White Wyandotte.

In all points, except color, the White is the same as the other varieties. The most difficult point in breeding is to obtain purity of color; not only should the surface be pure white, but also the under-color, right to the skin. It is difficult to get the cockerels entirely free from a yellow tinge, especially on hackle and saddle, and very often pullets that look to be pure in pen will, if examined, be found to have a shade of yellow in under-color. As in other white breeds that are intended for exhibition, these should be kept well shaded from the sun. If exposed, the top color will soon show signs of it by turning yellow. It is very easy to tell whether the straw color is the result of exposure. If so, on turning up the feathers the under-color will be found to be pure white, and if not, the straw color will extend right to the skin. It is difficult to tell what the chicks will turn out until they have got their full feathers, and they are dried out, the sap in the feathers giving them a yellow appearance. In many instances, birds in their second feather are much purer in color than they were during their first feather.

A great point in favor of Whites is that they improve with age as exhibition birds for the first two or three seasons, and being more developed can generally beat the young birds. They are good setters, gentle mothers, easy to break off broodiness, and are not long before they are laying again.

They do well in confinement, but are difficult to keep clean when penned up; but where they have an unlimited run nothing looks prettier than a flock of Whites. Very little need be said as regards mating and breeding. The main points to aim for are purity of color, as large and good shape as possible, neat head points, pure colored beaks, and rich legs.

The Partridge Wyandotte.

The last two seasons in England have certainly been sensational ones for the Partridge Wyandotte breeders, the demand being enormous, and prices for good birds ruling very high. The International Club Show winner of 1905 changed hands three times, first for £50, then for £80, and the last time for £165. Again, this year's Palace winner changed ownership for £100. In addition to these, other birds made from £65 downwards; last year's Dairy winning pullet made £75, and £50 being offered and refused for another one.

They are very handsome in appearance, being in color exactly the same as the Partridge Cochin, and, taken up either for exhibition or utility purposes or for a combination of the two, they will be found to fill the bill in every respect The Americans cannot claim sole credit for the production of this variety, as several English fanciers manufactured a strain of their own, and at the present time there is a wide difference between the English and American standards, the English standards requiring the male birds to be bright in top color, whilst the Americans require a dark top; also in the hens, that of the Americans requires a dark or foxy ground color, and that of the English specifies a light brown color, free from red or yellow tinge.

In my opinion, the English standard is the better of the two, as the rich, bright top color of the cocks, although perhaps more difficult to obtain, forms a greater contrast with the jet black breast, and gives the bird a far more handsome appearance than that of the American cocks, while in hens the pencilling on a light brown ground color is far more effective than that on a dark or red ground color.

The type of Partridges should be exactly the same as the other breeds of Wyandottes, and the color as follows:—The male: Neck hackle rich orange or golden red, with paler shade at bottom, and each feather being striped down centre; breast jet black, and perfectly free from markings; back and shoulder rich red, solid black wing bar, and rich tail flights;

fluff and tail, sound black. Hen: Neck hackle golden yellow, with black stripe; breast, light ground color of even shade, and distinctly pencilled, with a darker shade, uniform throughout; back, same as breast, the pencilling to extend well to tail; wing, same color as back.

As in other marked varieties, it is necessary to have two strains for breeding, one for cockerels and the other for pullets. For the pullet breeding pen, select hens as near as possible to perfection, and mate with a cockerel of a pullet breeding strain, with rich, bright, even top color, and pencilled on breast and fluff. For cockerel breeding, select a male bird as near perfection as possible, and mate him with big, shapely pullets, good in hackle, head and legs. It does not matter if hens fail in pencilling, but it is important that they are of a cockerel breeding strain.

THE SILVER PENCILLED AND COLUMBIAN are colors that appear to be making headway in England, and to the fancier or breeder who wishes to take up a breed that promises to become one of the most popular, I would recommend the Silver Pencilled Wyandotte. The color and markings are the same as those of the Dark Brahma, and the general characteristics as in other colors.

The Columbian is one of the latest introductions, and in some quarters a great future is predicted for it. In color and marking it is exactly like the Light Brahma, and in shape, head and legs as the other varieties of Wyandottes.

Parentage is one of the most important points to be remembered when setting eggs. All eggs should be marked when collected, so that it is known which hen has laid them. The chicks should then be marked as soon as hatched (this is usually done on the webs of the toes), and a record kept of such marks, together with the particulars regarding the parents.

Make provision for shade, both for fowls and drinking water, now. Don't wait till Summer arrives.

FOR UP-TO-DATE FOOTWEAR

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Nests for Sitting Hens.

Some make the nests at various distances from the ground or floor, others try to keep them all low. The latter are decidedly to be preferred in hot weather, but now the elevated nests are not objectionable to any extent: the ordinary laying boxes may be employed in hatching, but each one should have a shutter in front with a little round hole in the middle. The hen then usually settles down with her face to the hole. She seems to enjoy the ray of light, and sits better with it. A wide space for the nest is not needed. The eggs are kept better together when confined. In making the nests put a layer of moist fine ashes in the bottom, then a layer of pliable straw, well packed round the sides, and line with soft hay. Do not make a deep hole in the middle, as some of the side eggs will tumble down and be squashed. A soup plate arrangement is most suitable, and all should be very firm to prevent the eggs from becoming embedded in the material. It is best to make the nests up as they are wanted. If done long beforehand, they lack the sweetness when the hen is put in that she relishes. When completed and the hen ready, put a bad or dummy egg or two in, and always in the dusk in the evening: put the hen on, and close. She may flutter and be wild. To put the whole of the eggs in straight away often results in breakage: hence the object of a trial. Next evening look at the hen. If she will bear hondling without fear, it may be taken that she has settled down to her work. If she is restless, let her remain till she settles, but water and feed in the meantime Some would be ready the following morning, others not for a day or two, and others who do not mean business, but only make a pretence at sitting, will clear out quickly on the first chance. Let them go, for one must be quite sure they are to stay before putting the eggs under.

This should be done in the evening after the hen has been watered and fed. Let the hen find her own way back to the nest and settle again. Then take out the eggs she had on trial and introduce those to be hatched. She will be pleased with the numbers and work gently to get them under her feathers. Next evening, before dark, take her off to feed and water. Carefully catch hold of both wings. There may be eggs under them, which, if roughly handled, might fall down and break. Close the entrance that she cannot rush back to the nest, and let her eat and drink, remain off fifteen minutes or so, then return. At first they may not go back to the nest quietly, and must be caught and put on, but they soon come to manage this part. It should be seen that they do not change nests. Each one should keep to her own, or trouble may follow. As for feeding, green feed is not suitable, only hard corn, wheat, barley, and Indian corn. They must have sufficient, as the work is exhausting.

Preserving Eggs.

In the local markets eggs are taking a downward tendency, and in a few weeks will be still lower in price. The following formulæ for preserving eggs are reliable, they having been tested thoroughly:—

LIMEWATER-BRINE METHOD.

Limewater-brine has been used for packing eggs for many generations, and the formula is undoubtedly old. Various modifications of it have been printed from time to time, and every now and then we hear of a new limewater formula for use in the preservation of eggs, but when they are brought down to bedrock the formulæ are all very much of the same character. Careful test has shown that this method, when properly employed, can be depended upon to preserve eggs for from six months to a year, keeping them in a fairly good condition with very little loss.

Experiments made by the Rhode Island Agricultural Experiment Station resulted in their keeping eggs in limewater-brine solution from 18th May, 1899, to 30th May, 1900. The eggs, after being in the solution more than a year, were in very good condition. The exteriors of the shells were clean and clear, the contents were normal in appearance, and the air-cells had not increased in size. These eggs proved very satisfactory for culinary purposes, but had a rather salt and sharp taste. This peculiar taste is common to all limed eggs if they have been kept any length of time, as the strong alkali and brine are bound to penetrate the shell.

Formula.—The limewater-brine solution is made by mixing 16 ounces quicklime with 8 ounces common table salt. This is thoroughly slaked by adding 1 gallon of water that has been boiled and allowed to cool. After the mixture has been thoroughly slaked and well stirred allow it to settle, and draw off the clear solution. The eggs should be perfectly fresh and clean. They should be packed in stoneware, glass, or galvanised iron receptacles, and the clear limewater-brine poured over them until it stands 2 or 3 inches above the topmost layer of eggs. The container should then be tightly covered and placed in a cool cellar or cold chest until the eggs are needed for use.

THE WATER-GLASS METHOD.

Water-glass, soluble glass, or silicate of sodium has during the past ten years become recognised as the most reliable and desirable means of preserving eggs. The silicate of potassium has also been used, but is not as desirable as the sodium silicate. Sodium silicate or soluble glass is met with in commerce in a variety of forms, notably as a solid in crude lumps or glossy masses, or as a crude powder of a whitish-brown color. It is also obtained as a jelly having a whitish-grey color.

None of these forms are desirable for the poultryman because of the difficulty in preparing them for use. The sodium silicate which concerns the poultryman is the commercial sodium solution which usually contains about 10 to 12 per cent of soda and from 20 to 24 per cent. of silica. It is a transparent or nearly transparent, almost colorless, viscid liquid, without odour, but having a salt or sharp alkaline taste. Its specific gravity varies from 1.12 to 1.40.

The majority of tests in the preservation of eggs have been made with the water-glass solution or syrup having a specific gravity of between 1 12 to 1.50 In large quantities, water-glass solution is supplied in hardwood barrels or casks. Care, however, must be taken not to allow nails or other similar metals to come in contact with the solution, as they discolor it. A good quality of water-glass "syrup" should be free from yellow coloring, the yellow usually being traceable to discoloring through contact with iron. Galvanised iron and pure tin do not seem to have any effect on the solution.

Method of Preparing Water-glass for the Preservation of Eggs.

In diluting water-glass, for making an egg-preserving solution, distilled or thoroughly boiled water should be used. The best plan is to add to 1 quart of the water-glass "syrup" 9 quarts of boiled or distilled water, thoroughly mixing the same. When the solution is cool, it is ready for use. The eggs should be fresh gathered, all dirty eggs should be thrown out, and the clean, fresh eggs should be placed small end down in some water-tight container that can be covered. It is desirable to "candle" all eggs before packing them. Wooden kegs or buckets are not as desirable as stoneware, galvanised iron, or glassware. After filling the container with layers of eggs. all packed small end downward until a few inches off the top, pour the cool diluted water-glass solution over the eggs until it stands within 2 or 3 inches above the topmost layer of eggs. Cover the container tightly, and set in a cold place until the eggs are wanted for use. The container should always be kept in a cool clean room, like a milk-room or cold cellar. The room should be well aired. and so far as possible free from any objectionable odours.

Eggs may be kept in this manner for from six months to a year with practically no loss. When desired for use, the solution should be drawn off: the eggs may be washed or rinsed and then placed in racks to dry, when they will be ready to pack in cases for shipping to market, or to be handed over to the cook for household purposes.

* * *

Keep your grit box full, and keep up the variety also. Grit has many uses, and you can't afford to let the supply run out.

Don't make the mistake of hatching more chicks than you can handle this year. If you do, sell some quickly, before they die.

ST. ELMO

Dk. Ch. Stallion.
14 Hands High. Plenty of Substance.
Splendid Action. Good in all Harness.

Is by Young Tipperary; grandsire, Tipperary. Dam, Leah, by Sir Lucius O'Trigger; g dam, Lily, by Rushtroom (Imp.); gg dam, Conrad's Mare.

FIRST PRIZE, Adelaide Show, September, 1906.
FIRST PRIZE, Gawler Show, September, 1906.
FIRST PRIZE, Two Wells Show, September, 1906.
FIRST PRIZE, Mount Barker Show, March, 1907.

Extract from The Register:—Among an excellent lot of ponies Mr. A. Brown's St. Elmo stood out prominently by defeating two hardened prizetakers in the entire class between 13.2 and 14.1 hands.

TERMS, £2 10s., payable on or before 1st January Groomage, 2s. 6d.

A. BROWN, Proprietor.

Tattersall's Stables, Pirie Street, Adelaide.

Have clean nest boxes and you will save lots of trouble in washing the eggs for market.

Lice will begin to play havoc in the Spring unless you take steps to keep them down.

Do not waste time with old, worn-out birds. They should be killed off.

Only keep profitable pullets or young hens in their prime.

Always have their nests low, so that the hens can step rather than be obliged to jump up or down, and a flat perch is best, for it is comfortable to their feet and a good support for the breast.

Washing eggs injures their keeping qualities. Have the nests clean in the first place, for the market does not want dirty goods of any kind.

It is not necessary to pay a fancy price for a good bull, for good bulls often sell at low prices, much lower sometimes than good cows.

The producers of milk must be taught how to handle the milk before it comes to the separators, how to run it through a seperator, and how to keep a separator clean when not in use.

To Correspondents.

T.S., Uraidla.—The tobacco plant need only be dried for spraying purposes. The stalk is as useful as the leaf. Drying is done under cover, as rain will wash out the nicotine. Curing is only necessary for manufacturing purposes.

W.G., Elliston.—The depth to drill wheat varies according to soil, but about 3 inches is the best average.

K.N., Kensington.—Ordinary fowls require 21 days to hatch. Guinea fowls go from 26 to 29 days, pea fowls from 28 to 30 days ducks 28 days. geese 30 days, turkeys 28 days, Aged eggs rarely hatch in the shortest time.

Amateur Gardener.—You can make a very good fertilising manure by putting bones and wood ash into a cask (or on a very small scale in a kerosine tin). Mix well together, and fill the cask up with water. Take a little out as required.

Rex, Geelong.—We thank you for your letter re black Spanish fowls. We will give an article on this breed in our next.

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Points of the Draught Horse.

In his recent bulletin on "The Principles and Practice of Horse-breeding," the noted American authority, Dr. A. S. Alexander, of the University of Wisconsin, explains as follows some of the points and characteristics of the typical draught horse :—

Height.—A typical draught horse should stand sixteen hands high, or somewhat over that height. Extra tall, leggy draughters, deficient in weight, width, and quality, are unliked in the market, and many of them are prone to chorea (St. Vitus' dance). Abnormally tall horess, unless wonderfully good in conformation, so that the height is not ungainly, are difficult to match, and, therefore, not in demand in the market. Such horses are used for single work, or as the middle horse of a three-horse team for hauling coal, etc.

Weight.—A draught horse should weigh 1,600lb. upwards. Weight is absolutely necessary for the hauling of heavy loads. It enables the horse to derive full benefit from the strength of his muscles and tendons, adds to the effect of his levers in motion, and gives him a firm grip upon the ground. It is a burden, and practically useless, when not associated with perfectly developed, exercised muscles, so far as actual work is concerned, but is requisite in every draught horse offered upon the market if he is to command a high price. Where the frame shows adaptability in a thin horse to put on flesh, he is bought by the professional feeder, who finishes him for the market. In a well-developed draught horse extra condition is considered worth 25 cents per pound in the Chicago market. For practical purposes the great weight of a draught horse should be made up of large, strong bones, and powerful muscles throughout the frame. Fat should be discounted in buying a draught horse for work, and, in judging, one should note development of muscle rather than wealth of flesh and fat. A typical draught horse should weigh 1,600 lb. or over when deprived of the condition referred to.

Form.—The entire make-up of the draught horse should suggest strength for heavy hauling. He should be broad, deep, thick, round, with each part in keeping with its neighboring parts, giving an appearance of symmetry and massiveness. He should be low-down, blocky, and compact, on short, strong-boned, clean legs, showing marked prominence and development of tendons, and the legs should be properly placed and set to secure correct, straight action at the walk or trot.

Quality.—This term applies to evident refinement in character of skin, muscles, bone, tendons, and hair. It infers, also, aristocratic breeding, and all the attributes of pure blood. It is indicated by high spirits, vigor, sprightly action, endurance, stamina, and intelligence, and is plainly indicated when the legs are free from meatiness, appear broad, flat, 'clefty,' and, if furnished with 'feather,' the hair under knees and hocks springs as a silky fringe from the rear of the tendons. Quality offsets grossness, and combines grace with great weight and power in the best types of draught horess.

Action.—A draught horse will have to do most of his hard work at a walking gait. It is, therefore, of supreme importance that he should be able to walk fast without tiring, and in order to do this his action must be perfectly straight and level. The joints must be easily and fully flexed, the feet must advance and be set down without deviations from a straight line. The soles of the feet should turn up and show plainly to the judge as the horse goes from him, at both walk and trot. The feet should be lifted quickly, fully, and rhythmically, and set down squarely and firmly. There should be no paddling, dishing, cutting, or interfering, nor should the fore legs roll or the hind legs be carried too close together or too far apart. In judging of action note the movements of each leg and foot, the handling of each joint, and the carriage of the entire body as the horse walks and trots around an enclosure, from the observer and to him. Lameness should be absent. The hocks should be carried well together. Rolling in front is due to too great width of chest. Stubby, stilty action in front indicates straight or too upright pasterns or shoulders, foot troubles, or weak knees. Similar action of the hind legs indicates upright pasterns, unsound feet, hock disease, weak stifles, hip weakness or kidney troubles. Knee and hock action should both be free and comparatively high.

Temperament.—A draught horse should have an energetic disposition, but should be free from vice, docile, tractable, and intelligent. Sluggishness, associated with obesity, is objectionable, and induces diseases such as 'grease,' eczema, and 'lymphangitis.'

Troublesome Light-harness Horses.

Some light horses have the trying fault of jibbing, or refusing to draw. This characteristic is not wonderful, seeing that only in modern times have many strains of light horses worn a collar, and the wonder is rather that they take it so kindly. The nearer the thoroughbred they are the more liable to object to the collar. One that I bred would not, at first, pull your hat off your head, but he eventually made a good, sharp, well-behaved trapper. The prevailing principle is patience. Never let him see nor hear a whip, or you will confirm his bad habits. I went further than that I put him as wheeler in a tall tandem cart, and hooked in front of him a fast, straight leader that started the trap, and then all went well. A jibber is not necessarily an idle horse that shirks his share of the draught, as when the load is once started he will often do more work than his willing companion. Any pair-horse driving carriage or wagon is a splendid place for a cold-collared horse, and whether he does rightly or wrongly he must always be petted, this being the only road to absolute cure. Besides the never-failing principle of patience and kindness, there is always the reduction of nervous energy by hard work. A ride and drive type of horse which objects to harness should be hunted or otherwise ridden until he is weary, and he will then be less desperate in his fight against that which he considers the indignity of harness work. Ride him long hours, and on arrival home put him in harness for ten minutes, and he soon sees that harness is as comfortable as saddle work.—From the 'Farmer and Stockbreeder.'

E. B. COX & Co., Seedsmen, Etc., corner Rundle Street and East Terrace.

October Number of 1907

The Australian Gardener

(A Monthly Journal of Floriculture, Horticulture, Agriculture, and Poultry),

CONTAINS—

The Vegetable Garden—
  Operations for the Month
Flower Garden—
  The Anemone.
  Operations for October.
  Tying.
  Plant Notes.
  Rose—'La France.'
EDITORIAL.

The Orchard—
  Trap Lanterns and Codlin Moth.
  Notes.
The Dairy—
  Jolting Milk during Transit.
  Butter Fat in Cream.
  Rearing Calves.
  The Milking Period.
ANSWERS TO CORRESPONDENTS.

The Farm—
  Union amongst French Farmers.
  Humus in the Soil.
The Poultry Yard—
  The Spanish Fowl.
  Fattening for Table.
  Deaths from Fatty Degeneration.
  &c, &c., &c.
WATTLE GROWING.

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Contributors.

All letters, manuscripts, and matter intended for publication should be addressed to the Adelaide Office, corner of Pirie and Wyatt Streets, Adelaide, and in order to appear in the following issue should be posted to reach Adelaide by the 20th of the current month. It is necessary that correspondents should furnish their names and addresses.

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Subscribers are asked to notify the Adelaide Office if they do not receive their copy of the paper; also any alteration of address.

EDITORIAL

THE October issue of "THE AUSTRALIAN GARDENER" is replete with the most useful and practical directions for the amateur and the professional work in the garden, the poultry yard, the orchard, and the dairy.

The operations for the month deal with the early battles to be fought against the little beasts of prey that come with the buds of spring. If it were not for the pests the life of the orchardist would be far too easy, and he has the consolation of knowing when gathering time comes on that if it were not for his strenuous efforts in preserving the fruit when young he would not sell it when mature, indeed it is very doubtful whether it would be there to sell. Having the trees in the ground the golden rule for the worker is that the ground supplies the tree with what it wants to grow fruit. Many workers in the orchard appear to overlook the fact that the soil is really of more importance than the tree itself. Given proper conditions the tree will understand what is wanted of it and grow accordingly.

All plant life is responsive to treatment. Bad treatment will be resented by nature and equally true it is that good treatment will receive a ready response. The tree is a machine for producing fruit and bearing this in mind nothing is worth doing that does not bring fruit as a result. Better leave the tree alone to follow its own devices in bearing than humbug it about without any plan of operations to bring about a certain result.

Among the flowers there is plenty to do just now, as our operations clearly show. Weeds are a great nuisance, but not such a nuisance as a lazy gardener. You never hear of a gardener with shar shiny hoes and spades and forks, talkin about weeds being a nuisance. He doe not regard them in that light at all, but rather as an indication that where they grow best and strongest he will get the best results from his plants. Not because the weeds are a nuisance, but because the soil and condition are favorable to plant life and the cutting up of a few weeds when young, and he never allows them to grow old, is neither a matter of time or thought, but just a bit of the day's routine of work.

A careful reading of the poultry article will repay even those who are not keenly interested in the business. The man who understands it best is the one who writes in a simple, practical fashion. Everybody understands him and says thank you, for there is almost sure to be something to learn.

In the dairy notes we are culling from the Americans, those marvellous people who seem to have a grip of the art of producing goods from the dairy in a way that always creates surprise. They do everything so big, so regular, so scientific, so altogether for the mighty dollar, that while we do not admire some of their business habits we cannot help being astonished at the results. One of their secrets lies in carefully recording everything. They waste nothing, neither time, opportunity, nor money.

COMMERCIAL AND ORNAMENTAL PRINTING of every description in first-class style, on the shortest notice, and at cheapest rates, at the "Australian Gardener" Office, corner of Pirie and Wyatt streets.

The Vegetable Garden.

SNAKE OR ASPARAGUS BEAN.

CASEKNIFE RUNNER BEAN

Operations for the Month.

Vegetables of varieties that have been backward hitherto should make a satisfactory start during this month if the weather happens to be favorable and occasional showers of rain should fall; and vegetables of tender kinds may be planted almost anywhere with safety. Farm-yard manure should be used in good quantity, and particularly so during the summer, for one of the best effects of the abundance of organic matter is the conservation in the soil of much more moisture than would otherwise be the case. The effect, too, of such manure used as a mulch can hardly be over-estimated, should dry weather set in.

Asparagus.—Plant out early in the month.

Beans, French or Kidney.—The numerous varieties of this bean are classed as tender, for they cannot endure cold weather, and are liable to be cut down and killed by frosts. They may be sown now in most parts of the State, and even in the cold districts. In the warm places plants are well above ground, and some are already bearing well. Sow seed of various kinds, including both dwarf and tall varieties, as well as a few Scarlet runners.

Bean, Lima.—Sow this useful bean in all warm localities, and try both dwarf and tall varieties.

Beet, Red.—This is one of the best of salad vegetables, and excellent for summer use. Make the surface soil as fine as possible, and sow in drills about 1 inch deep, making the drills about 18 inches apart. Two or three sowings may be made during the month (a little at a time) in order to keep up a succession of roots for use.

Beet, Silver.—This is an excellent summer vegetable, and very few plants should suffice if they are taken care of. Sow in seed-bed, and afterwards transplant the seedlings to heavily manured land, about 18 inches or so apart.

Cabbage.—Keep up a small stock of plants by sowing a little seed occasionally during the month, just according to requirements. Prick out a few seedlings occasionally in good, rich soil, and as they become strong little plants shift to permanent quarters. Use abundance of manure for the cabbage. Cultivate well during growth, and do not ridge up the plants with soil.

Cape Gooseberry.—The fruit is fit for dessert, and also makes a delicious jelly. Sow now, and prick out in one row along a warm sheltered border of rich soil, two feet apart, choosing a damp day. The plants should be stopped by pinching out the top of the shoots occasionally to induce a sturdy and bushy growth.

Capsicum.—Late crops should be sown in a warm situation, where they should be allowed to remain. They should be planted 3 feet apart.

Cauliflower.—This, too, requires rich soil to enable it to come to perfection. It should be grown without any more check than it is possible to avoid in lifting and planting. Plant only during the month in cool districts, and supply water should the weather prove dry.

Carrot.—Sow a few drills and endeavor to keep a supply going, for this is a very useful vegetable and a wholesome one as well. Stock will enjoy any surplus not needed for the house. Make the surface soil as fine as possible, and let the drills be from 1 foot to 18 inches apart. Thin out seedlings well when they are 2 or 3 inches in height.

Celery.—When well grown, celery is a palatable and much appreciated vegetable. It needs abundance of manure and a good deal of moisture. Otherwise its quality will be inferior, although the plants will be useful for cooking purposes. Sow a little seed in seed-bed or box, whichever is convenient. Prick out seedlings a few inches apart in good soil when the plants are 3 or 4 inches high, and afterwards transfer to shallow trenches made in well prepared ground. Try self-blanching varieties, which are easier to blanch than the other kinds; for although termed self-blanching they will need the leaf-stalks to be covered from the light.

Chocho.—If procurable plant one or two in a situation where the vines can ramble about over a fence, wall, or anything suitable.

Cucumber.—In warm districts seed may be sown freely now, under protection of some kind in the cooler places. Instead of making holes and placing manure in them, manure the bed where the cucumbers are to grow. Sow about half-a-dozen seeds in shallow depressions about 6 feet apart, and thin out the seedlings to two or three until the plants are quite strong, and then one plant should suffice.

Endive.—This species of chicory is well worth a trial by those who may not have grown it. The plant is like lettuce to some extent, and is not infrequently taken for it, and for which it is a useful substitute. Seed may be sown during the month, and when the seedlings are 2 or 3 inches high prick out as advised for cabbage, cauliflower, etc. Then afterwards transplant to well-manured ground.

Leek.—Sow seeds and plant out advanced seedlings in well-manured ground. This vegetable is a greedy feeder, and needs more manure in proportion than any other vegetable.

CAPE GOOSEBERRY.

Lettuce.—Sow seed in seed-bed, prick out seedlings when they are well advanced, but avoid breaking more roots than is possible. Well-advanced pricked-out plants can be shifted during the month to well-manured ground. After this month, and during summer, the seed had better be sown in the bed where the lettuces are to grow; if transplanted at that time of year the plants are very liable to run to seed.

LONG RED CAPSICUM.

Melons.—Of various kinds. Seed may be sown freely in early districts, and under protection in cold places. Treat as advised for cucumber.

Okra or Gombo.—Seed may be sown in warm localities. This is a tender plant, and is liable to be killed by frosts. The plants should stand about 2 feet apart when set out.

Onion.—This is a good time to sow seed of all sort of onions. The seed may be sown in seed-beds, and the seedling onions transplanted where they are to grow; or seed may be sown in prepared beds in the garden. The soil should be heavily manured and well drained, well dug, and the surface made as fine as possible. Sow in drills, quite shallow, and 6 inches to 1 foot or more apart according to size of onion required. When seedlings come up, keep them free from weeds. The first method is the best to adopt for private gardens.

Parsnip.—Sow a few rows from time to time during the month.

Pumpkin.—Sow a few seeds in ground as advised for cucumbers, only plant seed wider apart.

Tomato.—Plants that have been raised and are strong enough may be planted out anywhere if they be protected from frosty nights This vegetable does not require over-much manure; but if the soil is of an inferior character, a good heavy dressing should be applied. Liquid manure will be found invaluable for use during the progress of the plants. Provide supports, and allow only one stem to grow, removing all side shoots.

Turnip.—Sow a few rows in drills about 18 inches apart, and allow abundance of space between the plants, or else the bulbs will not increase much in size, and the plants will grow chiefly into leaves.

Vegetable Marrow and Squash.—Sow seeds in all warm localities, and treat as advised for cucumber.

The Flower Garden.

DOUBLE ANEMONES.

The Anemone.

[By J. Cronin.]

Anemone is a species of dwarf, perennial, herbaceous and tuberous-rooted plants, indigenous to portions of Europe, Asia, Africa, and America. A large number of species is known; many are highly decorative, the flowers being of varied form and color, while others are of little value as garden plants. The average height of the tuberous-rooted is less than 1 foot, some of the herbaceous kind attaining a height of 4 feet. The so-called florist's anemones have been derived from anemone coronaria, the poppy anemone, a native of South East Europe, florists having raised from this species numbers of types and varieties that produce large blooms of varied form and coloring, combined with increased vigor in the growth of the plants and more profuse blooming. The anemone was at one period largely grown and freely exhibited, but like other garden flowers its cultivation, for some inexplicable reason, was abandoned for some time, but of late years the plant has again become a favorite subject of cultivators chiefly on account of the excellence of some of the newly distributed types, of which the St. Brigid strain, Crown anemone, is a conspicuous example, the flowers exceeding in size and brilliancy those of the older varieties.

In this State the anemone is regarded as one of the most effective and easily cultivated of spring blooming plants, growing freely in most soils, and not requiring to be watered to produce its growth and bloom, owing to the fact that during the hot and dry period of summer the plants are in a state of rest. The tuberous-rooted varieties are specially suitable for cultivating in those places where water is scarce, a fine display of bloom being obtainable for little trouble and outlay during August, September, and October. Anemone Japonica and its varieties are also valuable garden plants. The original species is a native of Japan, and in no way resembles the spring blooming kinds. The plants are fibrous rooted, herbaceous perennials, and the growth and flowers are produced during summer and autumn. The flowers are white, and rose in color, and are borne in umbels on stems from 2 to 4 feet in height. Although classed as a hardy plant this anemone requires cultivation and moisture during the summer months.

Culture.

The most suitable soil for anemones of the tuberous-rooted class is a moderately light loam which should be well drained

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to insure success. The addition of clay, or heavy loam to light sandy soil, or sand, ashes, or well decayed manure to heavy soils, will bring them to a condition suitable for the culture of these plants. They may be grown in beds specially prepared for them, or as patches or individual plants in beds or borders. The most important point in their cultivation is that no manure should come into contact with the tubers or even near them, or their destruction is inevitable. In very poor soils some old and well rotted cow manure may be thoroughly mixed with soil at a depth of below 6 inches from the surface, but no fresh manure should be used. The tubers may be planted from February to May; where blooms are desired early an open and sunny position should be selected. Tubers should be planted at a depth of 2 inches in heavy soils to 3 inches in light, care being taken that the crowns are placed uppermost When the plants are grown in special beds the tubers should be set out in rows from 1½ to 2 feet apart, allowing from 9 to 12 inches in the rows for each plant. The same amount of room is advisable between each plant when anemones are grown to produce patches of bloom in beds or borders. Except in very dry places, or when planting is deferred till late in autumn, the spring blooming anemones will not require any artificial watering during a normal season, and the only cultivation required is the hoe between the rows or patches, and keep the plants free from weeds. When the plants have finished blooming, and the stems and leaves are withered, they should be lifted, and after being dried, stored away until the planting season arrives. Plants allowed to remain in the ground will flower early in winter, but fine weather is essential for the production of blooms of good type and quality.

Anemones of spring blooming types are increased by dividing the tubers, and from seeds. After the plants are lifted and dried, they should be divided, before storing, into pieces, each containing one or more eyes or buds. Seeds should be saved from the finest type and flowers, which may be cross fertilized with ease. The anemone produces seeds freely, the seeds being clothed with a woolly covering and clinging together. They should be separated before sowing, the easiest way being to mix with them a quantity of dry sand or other gritty material and rub them until they separate. They may be sown as soon as ripe, in small beds or boxes of fine soil. The young plants soon appear, and should be kept free from weeds and watered during dry weather, which will enable them to develop into fair plants, many of which will flower during the same year. After dying down they should be stored and replanted in season; when the tubers are very small, sifting from the soil is the common practice. If a good selection of seed is made some fine varieties may be produced.

The Japanese anemones will thrive and produce their blooms freely under ordinary border conditions. The plants are increased by divisions of the crowns, which may be done in autumn or early spring. Varieties obtainable are:—A. Japonica, rose; a double form of the same kind; A. Japonica, alba, white; and Honorine Joubert, and Whirlwind, white, larger and finer than the type.

Operations for October.

The most important ground operation at the present time is breaking the rough surface left after digging. Where the soil is heavy and retentive it will be found that a coarse lumpy surface is best attacked while comparatively moist, and after being pulverised a fairly smooth surface can be readily maintained in a loose condition and the moisture in the soil conserved.

A perennial gardening task is the destruction or prevention of insects and fungi, the work being greatly minimised by attacking the parasites early in the season. Flowers of sulphur dusted on plants of roses known to be liable to mildew; or sulphide of potassium used as a spray wash, at the rate of 1 oz. to 3 gallons of water, against rose mildew and rust on carnations are well known preventives of such fungi. Tobacco or soap washes are effective against aphides, the most general of the insect enemies of garden plants in the spring. A most thorough application is necessary, the aim being absolute extinction if possible.

Beds for the reception of chrysanthemums grown for exhibition should be ready now. If properly prepared during winter a digging will be sufficient, the main object being aerating the soil and thoroughly mixing the manure through it. Where a choice of plants is possible, moderately strong and sturdy plants should be selected, avoiding extra large and sappy, or weak and spindly specimens. Of the new varieties grown last season a few of the most promising are:—Richard Seddon, terra-cotta red; Miss Alexander, rosy cerise, reverse silver; Mrs. Jas. Whitton, white; Mrs. Bischoffsheim, deep yellow, overlaid with pink and red; Mrs. C. Beckett, white; Valerie Greenham, pink; W. A. Etherington, silvery mauve; Lady Conyers, rose pink, silvery reverse. Plants of chrysanthemums intended to produce large numbers of flowers may be planted at once. Three suckers planted about 1 foot apart in a triangle, will produce fine large plants before their season of blooming. Carnations should be staked, the growths tied regularly, and an excessive amount of shoots reduced to a few if fine flowers are desired. The buds on the selected shoots also be thinned, the large terminal bud being selected to remain in most varieties. In many varieties that preduce large flowers that invariably lose form by bursting the calices, a secondary bud should be saved, the flower resulting being smaller but of much superior form.

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Seeds of tender plants may be sown in boxes, or in beds if provision is made for sheltering the young plants from frost, if necessary. Seeds of dahlia, and a number of annuals that would be killed by frost if raised earlier may be sown now. A finely pulverised and firm surface should be prepared for small seeds, and some light soil, well mixed and sifted should be at hand for covering the seeds.

Plants of hardy annuals and perennials raised from seed earlier in the year may be planted out when large enough. Another batch of gladioli may be planted, the Lemoinei varieties, if selected, producing their flowers in December and January. Divisions of dahlia tubers may be planted for early blooming, a piece of the stem with tuber attached being sufficient to produce a large plant. A spot sheltered from hot winds should be selected if possible, as the plants will flower in mid-summer. A liberal allowance of manure should be deeply worked into the soil for each plant. The Pompon dahlias are useful for summer blooming. and resist hot winds better than the Show and Cactus types.

Tying.

Happy of old in their gardens were the fabled race of the Hyperboreans who lived in perpetual calm, beyond the sources of northern storms, and happy were the dwellers in the sheltered vales round Athens, where (so says their native poet) the bright golden Crocus and the Daffodil with its fair clusters flowered in winter untouched by any gale. It is the fashion to denounce tying and to say that flowers look best in the posture in which Nature places them, but let these critics try a season in a garden, into which winds contrive to twist themselves, from whatever point of the compass they blow. Add to this the dampness of the subsoil, which makes the plants grow tall and deficient in backbone; so that they not only get blown sideways but turn over until their heads touch the ground behind them like acrobats. If these flowers are to be kept visible tying them becomes a necessity.

But few gardening operations require more study and practice than tying. The tying apparatus forms a very important part of the gardening stock. It consists chiefly of iron, not made for plant stakes or they would cost four or five times as much as they do, but plain round iron rods, varying in size from a quarter to five-eighths of an inch in diameter, and cut obliquely, so as to form a sort of a blunt point, into lengths of from 2 feet to 6 feet. They are generally painted green. The prunings of apple trees are useful for tying small plants such as double daffodils. Westerly gales sometimes twist daffodils off at the ground line by dozens, so in exposed places choice daffodils like King Alfred and Weardale Perfection have to be tied. Small branching sticks of hazel are useful for plants with slender stems, like single and double florists' Pyrethrums. These should be inserted whilst the growing stalks are still short, and their height should be less than that of the plant at flowering.

Raffia is a better tying material than string for small plants, but for large stalks soft sacking twine is used, or for some of the largest and most top heavy, like the tallest perennial Sunflowers or the double Rudbeckia laciniata, tarred thatching cord is required.

No one would wish to tie up a stalk which was likely to support itself without it, so discretion founded on experience must be used. For instance, there is a black-stalked late-flowering Sunflower, said to be a variety of Helianthus tuberosus, which grows 6 feet high, with a spreading forest of stalks, and will resist a whole gale. Plants of this nature are few, but they are carefully noted and cherished. One or two of the tallest species of Cimicifuga are equally wind proof. In the year 1896 the writer tried how far he could do without tying up, and a decree went out that nothing was to be tied without his special orders. July was fine and calm and gave encouragement to the experiment, then came a wet August, followed by a September of gales. The tallest of the united plants were twisted off at the ground level first, then followed such a general destruction that it was resolved never again to trust to the tender mercies of Æolus.

To descend to particulars about the using of the iron rods: Delphiniums, tall Phloxes, Michaelmas Daisies, and such like stalks ought to have a loose tie before they are 2 feet high to prevent the stems from getting bent when young, in which case it is very difficult ever to get them straight again: this is merely a preliminary precaution. If there are many stalks, at least three or four rods should be used to each plant. It is much better not to fix the rods too upright, but they should lean a little outwards, as it is not well for the stalks to present a stiff row like a company of soldiers on parade, nor is it wise generally to make a sort of cradle of the rods, and place the stalks loose inside or they tumble about from side to side according to the wind.

A portion of them should be made fast to each rod, and room enough given for every side of each panicle of flowers to expand. The tops of the rods ought not to project above the flowers. Thin Bamboo canes are very cheap and are much used for supporting plants in borders. They do not hold up nearly so much weight nor offer so much resistance to wind as iron rods do, and unless the tie is made just above a joint it slips. They are less easy to fix in the ground. For making holes for that purpose a short bar of iron an inch in diameter, sharpened at one end and at the other turned round into a handle will be found useful

The habit of leaving plants to be tied until they are in bloom and sprawling on the ground, and then collecting all the stalks together and tying the flowers inwards like a besom head, as is done in some gardens, is enough to discredit the whole practice. Tying must not be deferred but the need of it must be anticipated, and it must be done leisurely to be done well. There is no operation in gardening of which the proverbial verse of the old Greek poet, the author of "Works and Days," is more true—"The man who puts off work till to-morrow is for ever struggling with calamities," so do not wait until the barometer jumps down during the night and the wind blows a gale, when a little forethought might have prevented the wreckage of choice ornaments which "all the Kings horses and all the Queen's men cannot set up again."

Pterostyrax hispidum flowers when it reaches a height of about 8 feet. It is one of the finest flowering small trees of Japan, almost rivaling the wisteria.

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Plant Notes.

Bougainvillea Glabra William K. Harris is destined to be extensively grown for purposes for which other varieties have but seldom been used. The foliage is beautifully spotted with creamy white, the spots in such numbers that it is a question, as the plant is sometimes seen, which color predominates.

Pteris Childsii is one of the most beautiful if not the best pteris in cultivation; it is a very robust grower, with large fronds and the pinnæ markedly dentated and undulated. This variety does not produce spores—a fact that will militate against it becoming very plentiful for some time to come.

Asparagus Ducheni is a valuable plant when grown, either for its use as a decorative plant or for cutting from, and it is exceedingly well suited for private greenhouses. It is of a vigorous, climbing habit, with striking shiny green foliage.

The Alpinias are pretty plants and A. Sanderæ, which is of recent introduction, is especially handsome, the leaves being about five inches long and tapering in a novel manner at both ends. The color of the foliage is a deep but bright green with broad stripes of white, close together, from the mid rib to the margin.

Ficus pandurata seems to be increasing constantly in the estimation of plant growers and buyers alike. This plant is not only unique and very decorative in appearance, but it also possesses a constitution that enables it to get along in a thrifty condition under unfavorable circumstances.

Crassula Lycopodioides.—This fresh-looking apparently tender plant, a native of South Africa, where it is found growing on dry stony ground, is being recommended in a Continental gardening journal as being very suitable as a carpet bedding plant. Its name describes its appearance, which is more that of a lycopodium than a crassula, and at first sight it might be taken as belonging to that genus. The plant is a good subject for employment in jardinieres, in the same manner as lycopodiums, and as a pot plant or planted out in sunny dry situations in conservatories it would be quite at home. The propagation of the plant from cuttings is easy, and a one year old plant will afford several hundreds of them. There are two other varieties of the plant which form a less dense growth of shoots, and whose leaves are of a greyish green tint.

Acacia Motteana (syn. A. Podalyriæfolia).—The chief merit which this plant possesses is its continuous flowering for a period of from three to four months, and in this particular it has no equal among acacias—the greatly valued A. dealbata scarcely remains in bloom for one month. The blooms are globular, lightly arranged on the spikes, and sessile.

The American mist tree, Rhus cotinoides, is a better species than the common one of Europe, R. cotinus The leaves are larger, handsomer and of a pleasing green color, while the growth of the shrub is not so straggling as that of the other. It is still rather uncommon in collections.

For steep banks and terraces, Lippia repens and Mesembryanthemum subcompressum are most valuable plants, for the reason that they require very little water during summer. The latter is of the most dazzling brightness when in bloom, the stems growing 10 to 20 feet in height.

LA FRANCE.

One of the finest of the Spring and Autumn blooming Roses, and for which we are indebted to Guillot, the renowned French rosarian. Introduced in 1867. Formerly classed as a hybrid perpetual, but now classified by the National Rose Society of England as a hybrid tea. A charming Rose, of a pale peach or lilac rose colour, with silvery white centre: of perfect form, and a most delightful perfume, essentially its own, and not approached by that of any other Rose. A general favorite both for the garden and for exhibition. The smallest garden should have a few feet of space reserved for "La France," which often produces its best blooms when but lightly pruned and grown in comparatively poor soil. A so-called climbing variety of this Rose was brought out in 1894, but is not to be relied upon as a climber.

The Orchard.

Trap-Lanterns and the Codlin Moth.

To the Editor.

Sir—Under the heading "Destroying the Codlin Moth," a letter appeared in your August number by an alleged American fruitgrower, who puffs a certain kerosene lamp as effective in destroying that fruitgrowers' bugbear. This however, I am afraid, is nothing but a clever way to obtain a cheap advertisement for obsolete stock, for the subject has been definitely disposed of by extensive investigations by several American Agricultural Experiment Stations. One, for example, is that connected with the Cornell University, Ithaca, N.Y., and their results were published in Bull. 202, June, 1902, by the Entomologist, M. V. Slingerland, under the title "Trap-Lanterns or Moth-Catchers," which may be inspected at my office, No. 3 Room, Public Library. In this it is shown that out of 13,000 tabulated insects thus caught in the midst of fruit trees, etc., only 13 per cent. were often injurious, but these mostly males, and *not a single Codlin moth among them*; 10 per cent. were decidedly beneficial, and the rest harmless! The good done was therefore insignificant—in respect of the Codlin moth wholly negative—but the evil very great.

Mr. F. L. Washburn, the Entomologist of the Minnesota University Experiment Station, expresses in Bull. 77, November, 1902, of the Division of Entomology, a similar conviction. He says (p. 48), in reference to a letter by an orchardist, Mr. Shugard, describing the results of that writer's experiments *re* a species of very numerous injurious beetles:—"Mr. Shugard's experience with a Lantern-trap is interesting as showing the futility of such contrivances often advertised as a 'sure cure' for all sorts of insect pests. In four nights he secured only 68 specimens, 54 of these were moths; the remainder, with one exception, were small insects, that exception being a beetle! Only one indidividual then of the *larger* number of beetles, which were flying in that vicinity, was caught in the trap." To persons only for whom all insects are alike in perversely attacking man's fruit, or all moths of same size as Codlin moths, can Lantern-traps seem effective, as they are for certain kinds for the collector. The latter cares not whether the insects are injurious or not, but only if they are new or rare for his collection. For only a limited number of kinds are drawn to light or to sugar, etc., and only in greater number during a few nights in the season, often only for a few hours in each, and those even of the injurious ones consist chiefly of males or females more or less exhausted of eggs. Their destruction therefore is not worth the trouble. My personal experience agrees perfectly with that of my much more effectively equipped Americon colleagues.—I am, Sir, etc ,

J. G. O. TEPPER.

Norwood, Sept. 3, 1907.

Notes

A good many growers have used the lime and sulphur spray this year, omitting the salt, and those who have done so claim that it is not so severe on the hands, and in every respect a much easier spray to handle. Some have added 2 to 3 lb. of bluestone to each 50 gallons, in addition to the 15 lb. each of lime and sulphur. It is well to make early arrangements for the fighting of the Codlin moth, and while arsenite of soda has proved to be much superior to the Paris green for fighting this pest, it is now claimed by many in America that the arsenate of lead is even much better than the arsenite of soda.

First Spraying.—Use 3 lb. of arsenate of lead to 50 gallons of water. The application should be given just as soon as most of the petals have fallen.

Second Spraying.—To follow about three weeks after the first, using 2 lb. of arsenate of lead to 50 gallons of water. Subsequent sprayings may be given at intervals of every four weeks if the moth is bad, using about 1½ lb. of arsenate of lead to 50 gallons of water. This spray is recommended by G. W. H. Valsh (California fruit-grower).

In spraying trees with this or any other spray, see that a good pressure is kept up, so that the pump will throw a good fine mist; and be particular to cover the inside and outside of the tree, as well as the whole of the fruit.

If the spring proves to be a wet one, it is advisable to spray any trees which have in previous wet years shown signs of fungus diseases—such as Peach curl on the peach tree, Black spot or Scab of the apple, Black spot of the grape-vine—and growers of Gordo Blanco and Sultana will have to keep a sharp look-out and keep the spray pumps going, else the crops will be lost.

Bordeaux mixture will be found the best spray at this time of the year for all fungus diseases. Should the San Jose scale put in an appearance after the leaves have started on the tree, the resin, soda, and fish-oil wash will be found the best to use on at this season of the year. Never spray either trees or vines while they are in bloom, else the chances are that the crop will be destroyed. They may be sprayed a week before coming into bloom, and a week after the fruit is set.

Green crops should be turned under this month, in order that they may become well rotted while there is still considerable moisture in the soil. If such crops are allowed to remain in land until the land becomes dry, it will be found almost impossible to plough the soil, to say nothing of turning them under, and the chances are that in place of doing good the opposite effect will result, as the moisture in place of being conserved will have been taken up by the crop, in consequence of which the soil will have become hardened, and when ploughing is attempted the ground will break apart in lumps, and it will be found impossible to turn the crop under, which will thus dry up instead of rotting as it should. If rain should not fall it will be found impossible to bring the land to a proper tilth, and owing to the absence of moisture in the soil the trees will in all probability suffer severely during the summer months, and the fruit will be of little value, as it will be undersized and flavorless. Therefore, in all dry districts, see the crops intended for turning under as a green manure are not allowed to stand too long before being ploughed under.

In our coastal districts where rains are of frequent occurrence, there is not the same probability of dry weather overtaking the fruit-grower, consequently he can take more risks than his confrere in in the inferior.

Citrus trees may be pruned now, and there are many orchards which would be greatly benefited by a thorough pruning. Do not permit the lemon-trees to grow high and willowy, but rather remove those weak limbs which are so often growing up through the top of all lemon-trees, and keep the tree lower, when it will be found much easier to spray, fumigate, and pick the fruit from it. Oranges and mandarins are greatly benefited by a cleaning out from the centre of all superfluous and worthless limbs, twigs, etc.

In every case see that the orchard is in thorough condition in every respect, as the future crop depends so largely on the condition in which the trees and soil are kept during the spring and summer months. See to it, therefore, that no blame can attach to you if they do not make a good start.

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Union amongst French Farmers.

When France paid promptly the enormous war indemnity demanded by Germany, who found the money? Not a few millionaires; not the Government as a Government; but the people as a whole, and none furnished greater contributions than the farmers. How is this? Travel through France and you will see vast areas under cultivation by small farmers, each individual holding ranging from 3 acres to 500 acres. Every available inch is cultivated, and every farmer puts away a few francs to be invested in Government securities. The greatest organisation in the world—the farmers' organisation—has for the past twenty years gone quietly and slowly about its work, making fresh strides every year.

Under a law of the Third Republic, of 21st March, 1884, the French farmer—and under that head is included the landholder, the occupier of the lands, and the agriculturists of every degree—is empowered to organise societies for the economic, industrial, commercial, and agricultural betterment of his class. They are permitted to possess the realty necessary for their meetings, library and lecture rooms, to establish banks among their members, to provide pensions for the aged, relief funds for the sick and needy, and to open offices for the unemployed. They are empowered to organise tribunals for the settlement of all contentions between workmen or between workmen and employers.

Under this law farmers and persons having to do with either the growing or disposing of farm products have combined to the number of 8,501,695, and are comprehended in 7,089 societies. These are the figures for 1st January, 1900.

The farmers' societies combine and organise in a larger body, called a union, of which there are ten in France now—the Northern Union, headquarters in Boulogne; the Normandy Union at Caen; the Breton Agricultural Union, Rennes; the Western Union, Angers; the Burgundy Union, Dijon; the Alpine and Provence Union, Marseilles; the South-western, Bordeaux; the South-eastern, Lyons; and the Union de Midi, Toulouse. Over these is a central body in Paris, to which all unions report, and which represents their interests in the French legislative body and in the more important matters of business.

The societies are each divided into a number of subordinate groups. The departmental or county union is divided into syndicates, these into cantonal or township unions, and these once again into communal or neighborhood syndicates. From the highest to the lowest political unit they are all interlinked, harmonious, and independent.

As to the advantages of this vast organisation, they are summed up:—The buying by wholesale of fertilisers and farm implements, doing away with all middlemen; the securing of cheap transportation of all the products at one time, thus reaching the most desirable markets in the best time. As to his profit, it is obvious. With the competition destroyed, the poorest farmer is on the same footing as the richest. The prices are never cut. The society always sees to that.

In regard to specific instances where the union has received benefit, it may be mentioned that the syndicates of Brittany and Normandy control the butter market of Paris. Its trains, starting from the smallest of hamlets, rapidly and expeditiously collect the butter, and get it into Paris at small cost. The experience of the apricot-growers of Roquevaire and Lascours is another. In former years the sale of their output hardly paid expenses. Since the union it has flourished. The harvests are all brought to a place agreed upon, and a sales' agent takes charge of them. Children employed by the syndicates remove the stones from the fruit, which sell from 4s. 9½d. to 7s. 11d. per 220 46 lb. The stones last year weighed 55,000 lb., and were picked by 150 women and children.

The fruit is whitened and packed in hermetically sealed cans for shipment to Belgium, Holland, England, the United States, and South Africa. The output from the one community last year reached 1,000,000 lb. It controlled the market, and prices were secured which brought a profit to everyone.

In every department of agriculture the result is the same. The farmer is rapidly taking charge of the market, and making terms which prove profitable. No one outside a syndicate can compete, because the society has all the advantage. He purchases his supplies cheaper, and in every way out-distances his rival. This is, of course, known to the farming class as a whole. Six hundred and fifty-six more syndicates were organised in 1900 than in 1899. The number of new ones last year approximated 1,000.

It will be only a question of a few years when every farmer and farm employee of the Republic will be a member of the trust. There will be none to compete with him. He will have a monopoly more complete than any other in the world.

Locksmith. Etc.

H. GEBHARDT (August J. Gebhardt) Locksmith, Gunsmith and Machinist, Grenfell Street (Rear of No. 70, right opposite Bible House) Adelaide. Repairs to Garden Tools and Implements a speciality, Keys fitted to any lock or any given sample.

Humus in the Soil.

The meaning of the word "humus" is decayed vegetable matter. Agricultural chemistry calls it organic matter. Soil is composed of two principal elements—mineral matter and humus. We have all noticed how readily newly cleared forest or prairie ground responds to a crop. This is because the land is rich in humus. After a time, because of constant cropping, the humus is worn out of the soil and it becomes barren in a measure, and particularly it fails to grow a crop in a drouth. The farmer has gone along year after year, taking off crops, and he has not resupplied the soil with decayed vegetable matter or humus.

One very important function of humus is to act like a sponge and hold moisture. To illustrate:—Take a tin pan and punch the bottom full of holes, then fill it with coarse sand and turn on a quart of water. It will be seen that a large portion of the water runs readily through the sand and out of the pan. Turn out the sand and fill the pan with dry muck, which is decayed vegetable matter. Turn on a quart of water, and but little of it will run through. As we said, the muck or humus holds the moisture like a sponge.

The Adelaide Show.

The Rryal Agricultural, Horticultural, and Floricultural Society's Show is known everywhere as the Adelaide, run by Mr Creswell. Talking generally the show and Creswell are one and the same thing, and what a huge concern it has grown into. Every year the show is extended, always worrying the Government for more space, and while they have the finest show grounds possible, the people get jammed in thousands, because there never is enough room for them. You hear some say, O, you see one show and they are all alike. Of course they are all alike because they are all shows. Trees are trees and they are more or less alike because they are trees but there is an infinite variety in them, if you know anything about them. The same with shows, the more you know about them the more interesting and instructive they are.

The last Adelaide September show was a great success, thanks to that wonderful organiser, the secretary. Every department was well represented and well provided for, and the man or woman who adversely criticised either the managment or the exhibits, would do well to stop away and not spoil the admiration of the thousands of their fellows who are out to enjoy themselves.

In these days of enlightenment in stock matters, no man is justified in keeping any but a pure-bred sire. If he has little use for him, the fact that he is raising the quality of his whole herd is sufficient reason for keping him.

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Have for Sale—

Aster, "Hercules."—A grand novelty of imposing effect, about 18 in. high. Purest white flowers, 6 to 7 in. in diameter on long stalks. 1s. pkt

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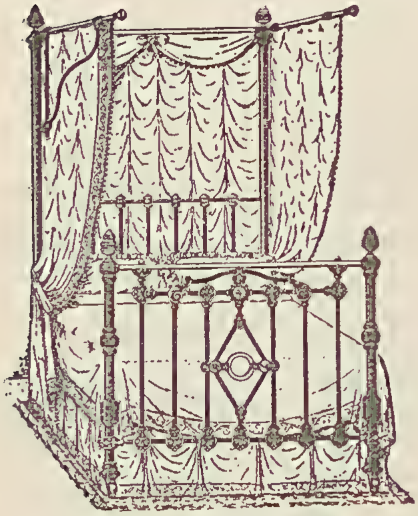

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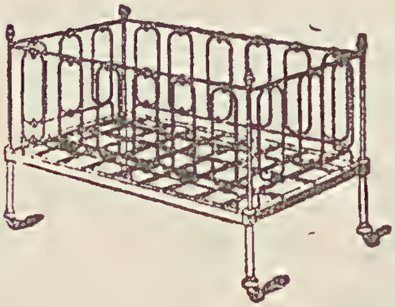

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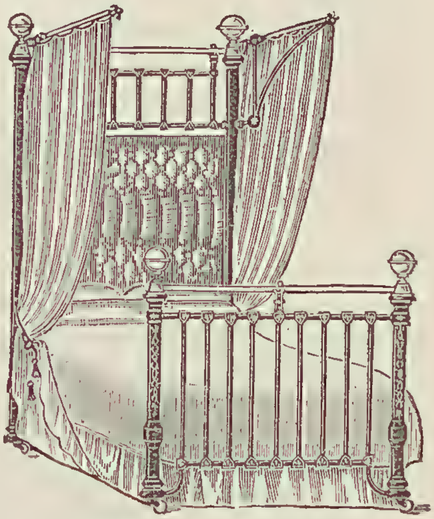

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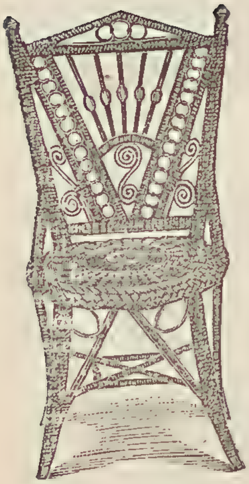

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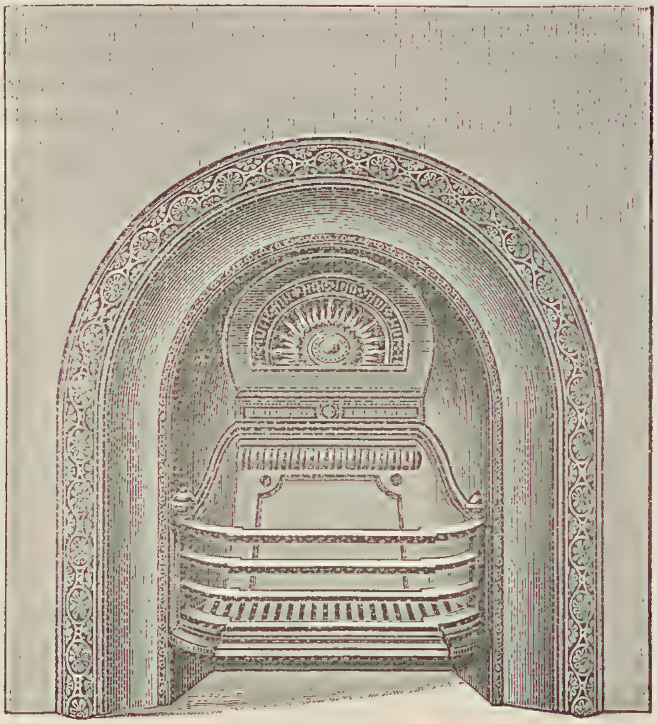

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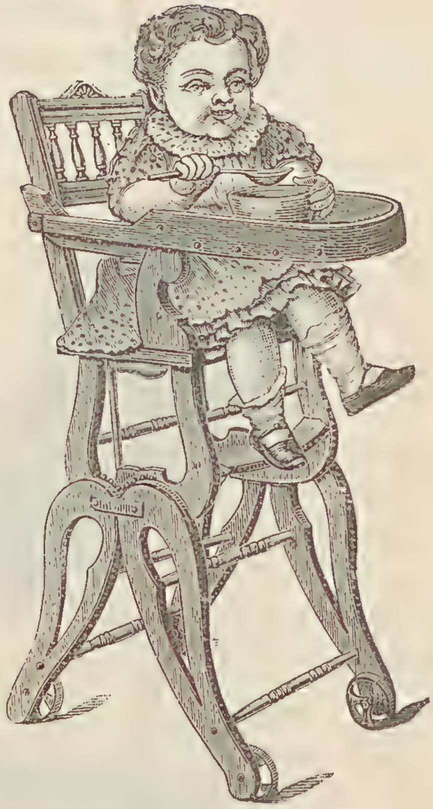

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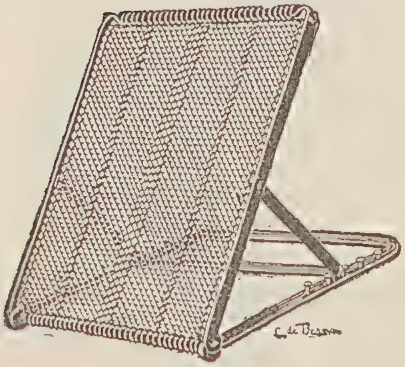

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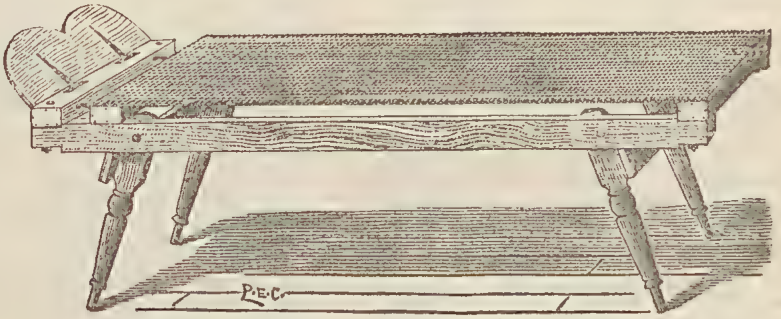

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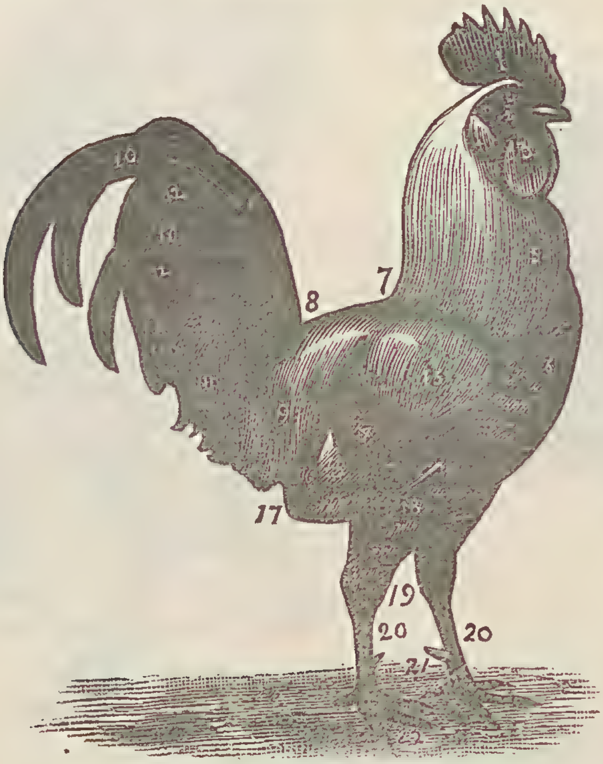

For explanation of points see previous issue.

The Spanish Fowl.

The Spanish breed is, in all probability, of ancient and remote origin, and does really seem to have reached us from the country after which it is named. In North Devon, England, they call the Spanish Fowls Minoreas others call them Portugal Fowls: neither terms remove them from thir old established location, if not their orignal home. It is a noble race of fowls possessing many great merits: of spirited and animated appearance, of considerable size, excellent for the table, both in whiteness of flesh and skin, and also in flavour laying exceeding large eggs in considerable numbers. Amongst birds of its own breed it is not deficient in courage; though it yields without showing much fight to those which have a dash of game blood in their veins. It is a general favourite in all large cities, for the additional advantage that no soil of smoke or dirt is apparent on its plumage and can certainly thrive under circumstances where few other varieties would live. We have seen curious cases on record of the places where Spanish fowls are kept. But what we once heard at an Edinburgh show will I think, be admitted to beat the record here. The first prize hen was usually kept under her owner's bed, other favourites being penned above.

The thorough-bred birds of the fancy should be entirely black, as far as feathers are concerned, and when in high condition display a greenish metallic lustre. The combs of both rooster and hen are exceedingly large, of a vivid and most brilliant scarlet; that of the hen droops over on one side. Their most singular feature is a large white patch, or ear-lobe on the cheek, which in some specimens extends over great part of the face, of a fleshy substance, similar to the wattle: it is small in the hens, but large and very conspicuous in the roosters. This marked contrast of black, bright red, and white, makes the head of the Spanish rooster as handsome as that of any variety we have, and in the genuine breed the whole form is equally good, but the scraggy, long-legged, mis-shappen mongrels one often sees are enough to throw discredit on the whole race.

Spanish hens are celebrated as good layers, and produce very large, quite white eggs, of a peculiar shape, being very thick at both ends, and yet tapering off a little at each. They are by no means good mothers of families, even when they do sit, which they will not often condescend to do, proving very careless, and frequently trampling half their brood underfoot. But the inconveniences of this habit are easily obviated by causing the eggs to be hatched by some more motherly hen.

It has been noticed that this variety of fowl frequently loses nearly all the feathers on the body, besides the usual quantity on the neck, wings and tail; and if they moult late and the weather is severe they feel it much. Nothing else can reasonably be expected to take place with an 'everlasting layer.' It often happens to the Guinea-fowl, and the reason of it is plain. If the system of a bird is exhausted by the unremitting production of eggs, it cannot contain within itself the wherewithal to supply the growth of feathers. The stream that will fill but one channel cannot be made to keep two at high-water mark. Nature ought not to be forced, as it requires a rest, but some people think it cannot be right if their hens do not lay every day.

Some birds are occasionally produced handsomely streaked with red on the hackle and back. This is no proof of bad breeding if other points are right. On the contrary, it is as near as may be the sort which Columella's relation might have kept in Spain at the time when he was improving the native sheep by the importation of rams from Morocco eighteen hundred years ago.

The chicks are large, as would be expected from such eggs, entirely shining black, except a pinafore of white on the breast, and a slight sprinkling under the chin, with sometimes also a little white round the beak and eyes: legs and feet black. Many of them do not get perfectly feathered till they are three parts grown, and therefore to have these birds come to perfection it is necessary to have them hatched early in spring, so that they may get well covered with plumage, before the cold rains of autumn. There is anything but uniformity in the time Spanish chickens get their plumage: the pullets are always earlier than the cockerels: the latter are generally half naked for a considerable time after hatching. This is a fact worth some particular remark, as many superficial observers have invariably rejected, for breeding purposes the cockerels which got their feathers early, supposing from that fact that they were not pure bred. But they possess all the qualities of the Spanish fully and truly developed, but that their early feathers so screen them from the inclemencies of the weather that they are enabled soon to outstrip their brethren in size.

The cross between the Pheasant Malay and Spanish produces a particularly handsome fowl.

Undertakers.

HADDY, J. C., & SON, Funeral Directors and Carriage Proprietors. All Funerals conducted under personal supervision. 113 Flinders St., Adelaide Phones—Adelaide 1677, Port 110; and Semaphore 255. and Jetty Road, Glenelg. Phone 78

Fattening for Table.

If cockerels are kept by themselves and out of sight of the other sex they will usually get sufficiently plump to look well on the table by being simply confined to a small house and run, and well fed on good flesh-forming food, such as oatmeal, ground oats, or good middlings, or the like, with a little fatty matter of some kind mixed with it. In the Sussex (England) fattening establishments they are put into airy, open coops, made of lattice-work, with barred bottoms, through which the droppings pass Five or six birds are put in a coop 2 ft, 4 in. long, 14 in. wide, and 18 in. high. As much food as they will eat is placed in small open troughs in front of the coops for the first ten days or a fortnight; after that they are crammed by means of a machine known as the crammer. Those of our readers who wish to specially fatten birds cannot do better than imitate the Sussex method so far as the first ten days are concerned, but should then substitute hand-cramming for the Sussex cramming machine.

To hand-cram a fowl the food should be made into pellets about the size of the two upper joints of the little finger, or somewhat larger if the bird to be crammed be pretty well grown. A sufficient supply of these pellets must be prepared beforehand. Finely-ground oatmeal, or ground oats, mixed with milk and a little dripping or mutton suet, is the best food to use. A little finely-mashed potato may be used advantageously. If milk is available, a bowl of it, into which the pellets can be dipped before being put into the bird's mouth, should be placed ready. Failing milk, a thin gruel, made with water and flour, may be used. It may be mentioned that sour milk, butter milk, and whey are all useful for fattening; the acidity of the sour milk is considered to be beneficial.

The operator should put on an old apron The bird, being taken from the pen, is placed in such a position that its legs can be firmly gripped between those of the operator, thus leaving both hands available for the process of cramming, and the bird's head being turned towards the right hand. With the forefinger and thumb of the left hand the upper mandible of the bird's beak is caught from behind, the comb being partly made use of to obtain a firm hold. The other fingers of the left hand are thus available to open the bird's mouth. With the right hand a pellet of food is next taken up, dipped in the milk or gruel, and placed as far down the bird's throat as can be managed. The finger and thumb of the right hand are then pressed gently along each side of the bird's gullet in such a way as to press the pellet of food before them down into the bird's crop, the bird's neck being kept well stretched the while to facilitate the operation.

This process, as described, may seem very difficult, but after a little practise it is really very simple, and the bird's crop can be filled readily in a couple of minutes. Care must be taken that the crop is not over-filled at first, but the quantity may be increased as the bird's powers of digestion are ascertained by experience. A spoonful or two of milk, given at the end of each meal, is all the drink that the bird requires, and it must be noted that the liquid in which the food is mixed during the first fortnight of the fattening process is the only drink given. The supply of grit must not be forgotten, and scrupulous cleanliness, as regards the feeding vessels, is essential.

The best method of killing is undoubtedly by wringing the neck. This is a somewhat appalling process to an amateur, as it is generally found that the neck refuses to be dislocated. If possible, it is well to get someone to show you how to do it The neck is not broken, but dislocated. Bear in mind, the head of the fowl is jointed to the neck in such a manner that it can move freely in any direction but backwards. Grasp the legs, with two or three of the primary feathers of the wing pulled round the legs, in the left hand, hold the head of the fowl with the thumb, just under the throat, and the fingers of the right hand round the head, then deflecting your wrist, bend the head, still firmly grasped, backwards as far as it will go; while in this position stretch out the neck to its full length, and a shar, firm pull should dislocate the neck. It is only merciful, when making the first attempt or two, to stun the fowl by giving it a sharp blow with a heavy stick at the back of its head. When the neck is dislocated the blood simply flows from the body into the skin of the neck, and this is the way the Sussex fowls are sent to market. If it is thought desirable, a gash may be cut in the skin, immediately the neck is pulled, to promote more bleeding. Authorities agree that the fowl is insensible to pain after dislocation of the vertebræ, its struggles being due to muscular action. Sometimes the point of a sharp knife is inserted through the roof of the mouth into the brain. This is instantaneous, and a most merciful method. If whiteness of skin is sought, the fowl is stabbed through arteries and veins of the neck and bled to death. Generally the meat is insipid. If the dead fowls are to be packed to travel they should never be made to bleed.

The process of plucking may be greatly facilitated by dipping the body for a minute or so in boiling water, the feathers then easily come off. This operation wrinkles the skin and spoils the fowl for market purposes, so it is only allowable if the body is required for home consumption.

Pekin ducks are excellent layers, non-sitters, and are very useful to cross with Aylesbury to obtain early ducklings.

Deaths from Fatty Degeneration.—A good many deaths among fowls are caused by fatty degeneration of one or other of the internal organs. This is invariably caused by unsuitable feeding, usually combined with over-feeding. A prolonged excess of starchy materials in the food will produce this condition, and birds so affected are of no value for any purpose whatever. As breeders they produce unhealthy stock, and are even unfit for culinary purposes. There is no excuse, as a rule, for birds being brought to such a condition. Proper feeding would prevent it. No large supplies of potato peelings, soaked bread, maize, or such like, but a healthy dietary of sharps, oatmeal, ground oats, barley-meal, biscuit-meal, with wheat, oats, French buckwheat, and a little maize now and again, all used in turn, or a mixture of one or two of them. Animal food in moderation is very useful, especially to birds in confinement, and also during cold weather. Changes of food are very necessary, and should never be forgotten. Birds which have been badly fed and show signs of fatty degeneration should be put on a new dietary, in which abundance of fresh vegetables forms a prominent part. Starchy stuffs should be eliminated as far as possible. A little Epsom salts every other day for a week, followed by a sulphate of iron tonic in the drinking water for some time, will do much good.

Do Thunderstorms Spoil Eggs?—A question that is sometimes asked is, Do thunderstorms spoil eggs when the latter are undergoing incubation? In a great many cases they do not; in a few a certain percentage of the eggs are affected. The latter, as a rule, are eggs which were not quite fresh when put into the incubator, or had travelled a long distance before being set. Perfectly fresh eggs are but little affected by thunderstorms; we doubt if they are affected at all. A good many people seem to have a notion that a bad hatch is sure to result if there is thunder in the air during the period of incubation, but we think a little observation, but we think a little observation would modify such views considerably.

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The Dairy.

Jolting Milk during Transit.

Another new discovery has lately been reported. In one particular factory it was repeatedly noticed that the milk supplied by farmers from a distance yielded less butter in proportion than that which had only to be brought a short distance. This led to experiments on the effect produced by the jolting to which milk is liable during transport The method adopted was as follows:—A quantity of milk was taken and divided into three parts, from which butter was made after cooling, followed by ten hours' creaming. The three parts (A, B, C.) were, however, subjected to different treatment; A was at once cooled by means of ice-water; B after standing two hours; C after being placed in a tin can and driven about in an ordinary cart for two hours. The average results were as follow;—Taking the yield of A in butter as 100 per cent., B produced 93·2 per cent., and C 88·5 per cent. These figures show that it is by no means a matter of indifference whether the milk is at once cooled or whether it gets a prolonged shaking. The shaking seems to diminish the yield, causing great uncertainty and irregularity in the results. Finally, keep good cows, feed them well, give them plenty of food and shelter treat them kindly, and observe scrupulous cleanliness, and prosperity is sure.

Butter Fat in Cream.

First grade cream should contain not less than 30 per cent. of butter fat, for the reason that cream with this per cent. of butter fat will keep better and costs less to transport than cream of a lower per cent. of fat, and the dairyman will recover more skim milk.

Some causes that tend to lower the butter fat to below 30 per cent. in cream separated with a cream separator:—

The variation in the per cent. of butter fat of hand-separated cream is very great if operators are not careful in operating their machines uniformly. There are several factors that influence the test of cream from separators. The first and probably the most important cause that reduces the per cent. of butter fat in cream is by turning too slowly, not giving the bowl enough speed. Anything that tends to change the speed of the bowl from one separation to another influences the per cent. of butter fat in the cream. A uniform speed of the bowl is obtained by turning the crank at a given speed at all times and giving the crank an equal pressure at all points in its circuit around the axis. The speed at which the machine should be run is indicated by the manufacturer. Follow these instructions and count the revolutions each time the machine is used, to be sure that the speed is maintained.

If milk is warm the cream will contain a slightly higher per cent. of butter fat; if cold, it will contain slightly lower per cent, other conditions being equal. Milk immediately after it is drawn from the cow has the proper temperature at which to separate.

Milk should be run through a separator at a constant rate. If milk is fed into the separator at an uneven rate, if at times the flow of milk be stopped, the thickness of the cream will be greatly influenced. The faster milk is run through a separator, the thinner will be the cream, other conditions being equal.

The amount of water or skim milk used to flush out the bowl will naturally tend to decrease the per cent. of butter fat by diluting the cream with water or milk.

There is a cream screw or skim milk screw in each separator for the purpose of changing the thickness of cream when desired. By this it can be so regulated as to skim thin or thick cream, and when once set, if all other conditions of the separator are uniform, it will produce nearly a constant per cent. of butter fat.

These principles hold true in all cream separators, and explain why the per cent. of butter fat sometimes runs below 30 per cent.

Rearing Calves.

When skim milk is fed to calves, there is something wanting in it, and that something is the butter taken out of the whole milk in the shape of cream. It follows, therefore, that this loss must be made up by some supplementary feed.

Linseed, oilcake, cotton-seed meal, bran, oats, and peas are all good Bran is frequently mixed with chopped oats and peas, and fed raw in the milk. That practice is most objectionable, and frequently results in the loss of the full value of the grain fed, besides inflicting injury upon the calf by scouring. The better plan is to put the bran and chopped oats and peas, with ground linseed in a dry state, into a box conveniently placed within the reach of the calf. Between the ages of one and three weeks most calves will begin to eat the mixture. The chewing necessary to comfortable swallowing fits the feed for proper digestion, and prevents all risk of scouring from that cause. The chewing also favors the free flow in the mouth of a good deal of saliva, needed to thoroughly digest the milk gulped down so hurriedly from the feeding pail. Linseed oilcake or cotton-seed meal may be boiled or well scalded and mixed in a syrupy state with the milk. The The composition of the additional feed might be about equal parts by bulk of bran, oats, and peas. No fixed quantity per head for feeding need be mentioned. It has been found desirable to allow the calves to take as much as they care to eat. Handfuls of the best new hay—and all hay for fodder should be cut on the green side—may be offered, and most calves will eat grass with a relish at a month old.

Opinions differ as to the relative advantage of keeping calves in the stable all summer and allowing them the run of the small pasture field. A grass plot with no shade from the sun, and where flies are numerous and diligent, is not the best place for calves. But if the calves be kept in a dark, cool stable during the hot days, and turned out for the evenings and nights, the protection of the soiling system will be coupled with the benefits of exercise and feed outside. Some farmers report very satisfactory results from adding turnips or small potatoes, pulped, to the aforementioned grain mixture, from the time the calves are three weeks old. No matter where fed, in the stable or out, each calf should receive only its own share, in its own pail, in its own stall, thus successfully avoiding the respective risks of gorging and starving.

Calves reared in this way will gain in size and strength of constitution all spring, summer, and autumn. When the severe weather of winter comes it finds these calves accustomed to live mainly on grass and dry chopped food. so that the change to stable and winter conditions of existence is not violent nor very trying. The best conditions for profitable growth having been supplied by the intelligence of the owner, the inherited good qualities of any calf will get fair play. But if good qualities of breed inherited from the best of stock be baulked at the beginning by unsuitable conditions for growth and thrift, all chance of after profit from milking or fattening is gone. The profit of dairymen can be largely augmented by proper attention to the early feeding of young calves.

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Sweet Peas

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The Milking Period.

An important point in dairying is the length of the milking period. It has been laid down that a not abnormal shrinkage is 10 per cent. of the record of the previous month. Naturally, the shrinkage varies very much; some cows will give a good flow for some time, while with others the yield of milk falls off very rapidly. Sometimes the shrinkage is as high as 15 per cent. That is too high altogether The object of feeding is that the cow may produce milk through a reasonable period. To maintain the flow of milk is one of the secrets of good dairying. To do this we should give the cows plenty of succulent feed—any quantity of it. The cow needs plenty of juicy material out of which to make milk. Peas and oats cut green are very valuable. and roots, but do not give them turnips. Every dairyman should have a silo; two tons of ensilage, costing about 12s. 6d., are equal to one ton of hay, which would cost from £1 5s. to £1 13s. 4d. In summer let the cows have plenty of shade and see that they are well protected from flies. Nothing will cause greater shrinkage than those two things—exposure to the hot sun and letting the flies worry the animals. The cows should get plenty of water and there should be no excitement, because that tends to lessen the yield of milk. Give the cows access to salt. By these means and by looking after their comfort in every way that we can, and by milking regularly and clean, we may maintain the flow of milk.

To Correspondents.

Alex. Blake —A good nest for hens can be made as follows:—Get a kerosene case and take the top off and nail two strips on the underside to make a lid, which can be easily removed and put on again. Knock a portion of the end out just large enough for the hen to get in and out, leaving a piece top and bottom to keep the box firm; you can then take out the eggs by removing the lid. and can also keep it and free from lice or tick by claensing out every week with suds on washing days.

N., Klemzig.—Yes, the London County Council recently passed certain by-laws, under which the owner of a crowing rooster may be called upon to abate the nuisance.

Thos. Brown—Spent hops are equal in value to 85 per cent. of stable manure, so that if the hops can be had at a nominal figure, we would certainly use them. Like stable manure, they are useful when fresh for ploughing into land, or when sufficiently decayed so that they can be rubbed through a coarse sieve, for mixing with soil for potted plants or for filling benches.

ST. ELMO

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Rushtroom (Imp.); gg. dam, Conrad's Mare.

FIRST PRIZE, Adelaide Show, September, 1906.
FIRST PRIZE, Gawler Show, September, 1906.
FIRST PRIZE, Two Wells Show, September, 1906.
FIRST PRIZE, Mount Barker Show, March, 1907.

Extract from THE REGISTER:—Among an excellent lot of ponies Mr. A. Brown's St. Elmo stood out prominently by defeating two hardened prizetakers in the entire class between 13.2 and 14.1 hands.

TERMS, £2 10s., payable on or before 1st January, Groomage, 2s. 6d.

A. BROWN, Proprietor

Tattersal's Stables, Pirie Street, Adelaide.

WHEN evergreens lose their leaders they become of very broad outline for a while, with but little addition to their height. A strong shoot should be tied to a stake as a leader. It will form one in time; but the perfection of appearance of an evergreen depends on the retention of its original leader.

AT CORNWALL, in the south of England, many eucalyptuses are quite hardy, the only place in that country of which this can be said. E. coccifera is considered the hardiest, but cordata. unigera, saligna, resinifera and viminalis all live out. A specimen of coccifera there is 70 ft. high. Cornwall is the southernmost part of England.

ONE of the finest subtropical large shrubs or small trees for high, dry elevations is Wigandia urens. The foliage, which is large and of a most beautiful shade of green, is covered with sharp, stiff hairs, as though a protection to the plant. The flowers are of a dark purple color, borne on one-sided spikes a foot or more long.

SEVERAL of the Cichoriacæ formed the 'bitter herbs' of the Jews.

TANSY (Tanacetum vulgare) was used as a remedy for wounds in the fourteenth century. It is bitter and a tonic, used in the country for fever and other illnesses, and is drunk as a 'tea.' It was also used in cookery in the sixteenth century, when Tansy cakes were highly esteemed in Lent, as well as Tansy puddings, according to Gerarde.

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Wattle Growing.

(By A. Tatham.)

Wherever tho black wattle (Acacia decurrens) grows naturally it is possible to cultivate it. On most properties there is always an acre or two of land that for some reason or other yields no return, and there is no reason why they should not be made to do so through wattles.

It would be difficult to find a soil that would not grow this tree, provided moisture was sufficient. But if any can be specially selected perhaps the granite country would gain first place. Those soils that are rich in humus are most favored, and often in granite localities, where the soil surface is made fairly free by the disintegration of the rocks, a dense vegetation of low-growing species, especially bracken fern, is found, causing an annual deposit of decaying vegetable matter. The wattle in its young state is tolerant of shade, and in fact thrives well in partial shade or under a leafy canopy. But to be at its best as far as bark production is concerned it should have no overhead shade, but plenty of undergrowth Its natural locality is a valley, but where the rainfall is 30 inches or over it is found growing well on ridges.

The wattle seeds profuse once in three years. To collect the seeds, the pods should be gathered just as they ripen, but before they open, as they will do on a hot day, and so shed the seed. The pods can be laid on sacks or rick cloth in the sun, where they get brittle or split; place all in a sack and beat it briskly with a stout stick, and the seed will be threshed out. If the sack is held up, and gently bounced on the ground it will be found that the seeds sink to the bottom and can easily be collected.

The area having been selected, the seed can be sown any time in the early autumn. The cheapest and easiest way to do this is to strive to get a locality that has trees growing on it; if bracken fern exists all the better. Do not attempt to remove any rubbish in t[illegible] of logs or dead limbs, leave all [illegible] is an excellent site for wattle [illegible] the autumn rains, throw the see[illegible] over the area; it requires no [illegible] preparation, if plenty of dry ve[illegible] is present.

Half a-pound oi seed is ample for an acre, in fact a quarter-of-a-pound will suffice, but is difficult to sow, except it is mixed with a bucket of sand or earth. On a favorable day, and with due regard for yourself and your neighbors, set fire to the block. The heat of the fire will assist germination, and the resulting ashes are sufficient cover for the seeds; injurious insects are destroyed, and the vegetation is burnt sufficiently to allow the young wattles to get a fair start in life, before they have to struggle through the quick growth of grass, etc, which will follow in the spring. In two years, the young wattles will be 2 to 3 feet high and beyond all interference from undergrowth.

So far the expense has been very slight. But as stock will greedily devour wattles the plantation must be fenced until such time as the young trees are too high for them, which ought to be in their fourth year. The style of fence need only be temporary and cheap, but effective.

If this style of plantation cannot be arranged, then more expensive methods must be resorted to. The next cheapest is to run disc cultivators over the area where possible, throw the seed on broadcast, and then brush harrow it in or roll it. But the seed needs preparation; quick germination cannot be hoped for unless it has been subject to heat, soakage, or fermentation. To heat seed. place it in a hot oven and as soon as it gets fairly hot remove it; this will keep for some time should rain not fall, Soaked seed is too tender to handle much and is only of use in seed beds, and should rain not fall after sowing it would perish. If land that has been broken up by ploughing can be secured it generally grows good wattles. Even ploughed-in seed has resulted in a good plantation, but it is expensive.

It is almost useless to grow wattles in plain country where trees have not previously grown, as they will require attention of an expensive nature to insure success. Above all strive to grow them in scrubby areas, do not ring or destroy the natural growth except where it greatly interferes with the young trees. As a rule wattles grown in the open suffer severely from insect pests and blight, and the want of sufficient humus in the soil checks their growth. These trees are as a rule of low growth, thin and hard in the bark, and as often as not cannot be stripped. The only way to remedy this evil if the soil is hard, is to break it up previous to sowing. On no account overcrowd the trees; the object to be aimed at is marketable bark and as much of it as possible. The only way to get this is by having large stemmed and big branched trees. If the trees are crowded they only grow lanky and thin, and thinning operations will have to be resorted to. If this is not done carefully the remaining trees will, through the weight of their crowns, often bend over and even get torn out of the ground; they are so weak that a gale of wind will level them From the first, keep them well apart, and the after result will well repay this precaution, besides paying the cost of thinning.

Lopping of branches may be resorted to, but no tree under 6 feet high needs it. It is after this height has been attained that a few branches may be removed; do not lop right up, rest content to remove a few only at a time. It is advisable not to lop any tree higher than 10 feet; the branches that grow beyond this are needed and will of themselves produce both quality and quantity of bark. Above all cut close to the stem, do not leave a stub sticking out. It is necessary that the wound should heal quickly, in order to prevent the inroads of borers or fungus disease; it cannot heal properly as long as the dead bit of branch sticks there. Then again, when stripping takes place these stubs are a cause of trouble and annoyance, preventing the easy removal of the bark. An acre of well grown wattle trees ought not to number more than 150, and, if grown in scrub, probably half this number. It is a great mistake to suppose that more trees will return a better profit. It is more than probable that an acre of 150 trees will produce more bark, and distinctly better quality, than an acre of 500 whipsticks that can only produce thin, inferior bark.

The greatest enemy to wattles is fire; at no period of their lives can they be considered safe should this element attack them. In most cases it kills them, and if not, so injures them that the bark is useless for stripping.

E. B. COX & Co., Seedsmen, Etc., corner Rundle Street and East Terrace.

November Number of 1907

The Australian Gardener

(A Monthly Journal of Floriculture, Horticulture, Agriculture, and Poultry),

CONTAINS—

The Vegetable Garden—
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Flower Garden—
The Sweet Pea.
Plant Notes.
Roses.
Bedding Plants, where and how to treat them.
EDITORIAL.

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When is Drainage Necessary.
Experiments with Barley,
Mulching.
ANSWERS TO CORRESPONDENTS.

The Dairy—
Caring for Milk.
Caring for Cream.
The Poultry Yard—
Egg Culture.
The Domestic Goose.
The Biter Bit.
&c , &c., &c.

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Contributors.

All letters, manuscripts, and matter intended for publication should be addressed to the Adelaide Office, corner of Pirie and Wyatt Streets, Adelaide, and in order to appear in the following issue should be posted to roach Adelaide by the 20th of the current month. It is necessary that correspondents should furnish their names and addresses.

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EDITORIAL.

THE November issue of 'THE AUSTRALIAN GARDENER' is full of practical and readable matter. The flower garden first claims attention, for there is plenty of work now in hand for the gaiety of summer blooms. The ever beautiful Sweet Peas, now at their best, will continue to be the admiration of all who love their rich and delicate colourings for some time yet, and the new strains that are being introduced from over the seas will make them bid fair to rival even the carnation in popularity.

Our plant notes contain all the necessary information for the guidance of amateur gardeners, and no serious mistakes will be made if their directions are followed, even if the enthusiast feels a little disappointed at times in trying to do too much.

Roses are still blooming well, and likely to go for some time, and the article on how to treat the soils will be opportune for those who have made failures and wish to know the cause.

The 'Florists' Exchange' again provides some useful instruction for our readers on bedding plants, where and how to treat them. It must ever be borne in mind that bedding is the first essential in success, for unless the delicate little plants are carefully provided for it is hardly fair to expect them to grow robustly. Nothing any good will ever come from sickly plants, so it appeals to one's common sense that to give them a good start in life is the prime consideration.

In the orchard the cnief thing now the fruit is set and developing well is to keep them free from pests, the chief of which is the dreaded Codlin moth. We are giving an article on spraying which is very timely. When done in the right way it is not so difficult as some think to combat this evil, and a few practical hints are very useful.

The dairy is the chief source of money-making to a large number of people, and with proper care, knowledge, and industry, few things pay better than milk. Caring for the milk and cream now that summer is fast coming on is the chief necessity. The information given under these heads should prove very useful, as they are written by those who undersatnd the business thoroughly.

Next to caring for produce is providing the feed. Cattle feed tremendously; it is surprising what a quantity of stuff they put away, and the production of feed is one of the first lessons to be learnt in the economics of successful farming. Water is one of the chief essentials, and the proper use of it requires much careful study Watering without drainage is as bad almost as no water at all, and the article under this heading is well worth careful reading. Following closely in importance to watering comes mulching To put water on the ground and let it bake under a hot sun is not fair treatment and we commend the author's remarks upon mulching.

For the poultry yard we are turning the attention of our readers to the profitable goose. In view of Christmas fast approoching there is money in the fat goose. It is surprising that more astention is not given to the rearing of geese in view of the fact thot it lives upon stuff that can be grown by everybody with a few yards of ground and a fair supply of watcr. Some practical information, too, upon the ever-increasing industry of egg culture snould prove very acceptable.

COMMERCIAL AND ORNAMENTAL PRINTING of every description in first-class style, on the shortest notice, and at cheapest rates, at the "Australian Gardener" Office, corner of Pirie and Wyatt streets.

The Vegetable Garden.

Earliest Delicacy Egg Plant,

QUALITY and flavor are the things to be desired above all others in vegetables. Their lives are brief, and many of them have to perfect a large system in a very short space of time. They require liberal feeding and attention. At this season the hoe must be used freely. It is important that no weeds remain. Where the soil has been well ridged in winter it should now be in a sweet, warm, and mellow condition for spring cropping. The soil should be arranged to conserve moisture and throw off heat. Advantage should be taken of the next rain to sow seeds of vegetables for summer and autumn use. During this month onions, carrots, parsnips, silver beet, turnips, and radishes can be planted. Late tomatoes are ready for planting in a sheltered position.

Bean, Kidney or French.—Varieties of this class of bean may be sown extensively during the month. There are many varieties obtainable (dwarf, runner, butter, and so on) and it would be as well to try several, for they differ a good deal in flavor and other qualities.

Bean, Lima.—This is another kind of bean altogether, for the seeds are used just as broad beans are. Sow during the month.

Beet, Red.—Sow in drills, 18 in. apart, sufficient seed to keep up a supply during the month. Try the Globe, as they are the most satisfactory to grow.

Beet, Silver.—Seedlings already raised may be planted out in the garden. Not many plants are likely to be required at a time. This is a useful vegetable for summer use, and one that will withstand a good deal of dry weather.

Cabbage.—Sow a little seed occasionally during the month in order to have a sufficient number of plants to meet requirements. Prick out seedlings that are large enough to move, and plant in the garden any well-grown pricked-out plants that are ready for removal. For the cabbage use abundance of manure, and during its growth keep it well cultivated by surface hoeings.

Cauliflower.—Sow seed, prick out seedlings, and plant and treat as advised for the cauliflower during summer.

Carrot.—Sow seed as largely as may be required from time to time during the month. Sow in drills from 1 foot to 18 inches apart, and thin out the carrots well as soon as the plants are thoroughly established.

Celery.—Seedlings large enough to plant should be set out in shallow trenches to meet requirements. Sow a pinch or so of seed in order to have a stock of plants on hand. Celery will need a good deal of moisture during its growth, and if the weather should be dry the plants should be well watered.

Large White-Ribbed Sea Kale Beet.

Celeriac, or Turnip-rooted Celery.—This is a variety of the above, but may be grown more like a turnip. This needs good rich soil and abundance of moisture.

Cucumber.—Seed may be sown largely, except in quite cold localities where late frosts moy still occur. Use abundance of farmyard manure, unless the soil is already rich enough naturally for this vegetable.

Cress and Mustard.—Sow a little seed occasionally during the month.

Spanish Mammoth Capsicum.

Capsicum or Chilli.—A plant or two should suffice for an ordinary garden, unless it be desired to try varieties, of which there are many, from the hot small-fruiting variety to the enotmous quite mild kinds, used chiefly for ornamental purposes. Seeds may be sown and seedlings planted out as soon as they are large enough to move.

Improved Bull Nose Capsicum.

Egg-plant.—Seed may be sown and seedlings planted out in vegetable garden.

Kohl Rabi.—Sow a few seeds and plant out seedlings. Probably very few plants will be required. Treat much as you would a cabbage in cultivation.

Leek.—Sow seed in seed-bed. and transplant seedlings when large enough. The soil should be made quite rich with abundance of manure for the leek, which is a greedy feeder. Abundance of water will also be necessary should the weather prove dry. Plant out, rather deep, the young leeks in shallow trenches. When the plants are well grown blanch the the stems, like celery.

Lettuce.—Sow seed in the garden in drills, and thin out seedlings when they have made good growth. Transplanting at this time of year is risky, for transplanted lettuces are liable to bolt or run to seed. Manure well, and water well if the weather is dry.

Melon, Rock or Water.—Sow seeds largely, and manage like cucumber.

Okra.—Sow seed in seed-bed, or transplant seedlings that have already been raised.

Onion.—Sow a little seed during the month, and cultivate well plants already raised. A dressing of soot and salt (half and half) should prove useful.

Sweet Melon—Early Hackensack.

Parsnip.—Sow sufficient seed in rows about 2 feet apart to keep up a supply during the month.

Potato.- Plant out a few rows of medium-sized whole potatoes. Be careful to select sead free from pests.

Pumpkin.—Sow a few seeds of best variety procurable. Should the soil be of poor quality, use a heavy dressing of farmyard manure. Sow four to six seeds in clumps about 6 to 8 feet apart, and thin out plants to two or three when they have made the second leaves.

Radish.—Sow a little seed from time to time to keep up a good fresh supply of tender radishes. Use abundance of well-rotted manure, or, better still, grow the radishes on land that had been heavily manured for other vegetables.

Peas.—A row or two may be sown in cool districts. It will be too warm and dry for success with these in other districts.

Rhubarb.—If seedling plants are required for planting out next early spring, some seeds may be sown this month.

Sweet Potatoes—Rooted cuttings should be planted out in any district where they are likely to grow.

Tomato.—Seedlings should be ready in all districts by this time for planting out. Train the plants to one stem by pinching out all side shoots as they appear. When planting, drive in a stout stake for the support of each plant. Seeds may be sown from time to time should any more seedlings be required.

Turnip.—Sow a little seed in drills in well-manured ground. Thin out seedlings well, or the turnips will grow all to top.

Vegetable Marrow or Squash.—Sow seeds freely, and treat as advised for cucumbers, pumpkins, etc.

The Flower Garden.

The Sweet Pea.

[By J. Cronin.]

Sweet, and everlasting peas, are annual and perennial species of Lathyrus, a genus of leguminous plants embracing many species of decorative value as garden plants. Most of the annual species are natives of South Europe and North Africa, the species from which the present garden forms of sweet peas have been raised being Lathyrus odoratus, a native of Sicily. This pea has been in cultivation in gardens for over two hundred years but its popularity as a valuable garden plant is of comparatively recent date. During the last twenty years a number of hortirulturists in England and America have made a special study of sweet peas, and by cross-fertilization and selection have produced varieties of great excellence, the size and form of the blooms and the varied coloring and freedom of flowering in the new varieties arousing a deal of public interest in the plants. The culture of sweet peas has become a feature in most gardens, large and small, the hardiness of the plants, wealth of bloom under fair conditions, ease of culture, and the short period elapsing between the sowing of the seeds and the blooming season being the principal factors in their popularity The flowers are produced in spring, and embrace almost all shades of color; the plants thrive under harsh conditions, but like most florists' flowers respond well to a little attention in the selection of site, soil and manure, and cultivation.

The everlasting pea—so styled on account of their perennial habit of growth —have been found native in various parts of Europe, Asia, and America. The kinds grown here and known as everlasting peas are Lathyrus latifolius—a native of Britain—and its varieties. As the plants are of herbaceous growth and rest in winter, the flowers of this species are produced in the summer months. Some improved forms of this pea have also been raised; the flowers are rose, white, and pink in color and are much larger than the sweet peas. The plants are very hardy and are valuable for supplying cut blooms during the hot summer months. There are several species of Lathyrus, in addition to latifolius, that are worthy of a place in our gardens; one of the finest lately ditsributed in Australia is Lathyrus pubescens, a native of Chili and Eucador. This is an evergreen perennial climber of very rapid growth, that produces masses of beautiful blooms of a lavender shade of blue, the flowers resembling a well-grown lupin rather than a pea. Most of the flowers of this kind are produced in spring, but

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there are occasional blooms at most seasons of the year. This pea is one of the best of recent plant introductions.

CULTIVATION.

The most suitable soil for the production of plants of the annual sweet pea that will bloom freely for a long period is a well enriched loam. The plants will grow under severe conditions, but as soon as the plant food and moisture are exhausted will cease to produce growth and to bloom freely. Soil for the reception of sweet peas should be prepared during summer, a liberal dressing of stable manure deeply worked into the soil being necessary. A light dressing of superphosphate of lime worked into the surface soil, or sown with the seeds, will assist materially in promoting vigorous growth.

Sweet peas are true annuals, producing flower and seed and dying in one season and are propagated exclusively from seeds. The seeds will produce plants bearing flowers identical with the parent variety unless artificially cross fertilized, or by the agency of insects, the latter an unlikely contingency as the organs of reproduction are enclosed in the calyx or keel of the flower. Varieties that have been grown for years have never varied from the original type, although grown among other varieties. Seeds should be sown during autumn to produce strong plants before the winter season arrives, when they will resist any weather conditions that occur in the greater portion of the State. In very cold districts the sowing may be deferred until spring if it is found that the plants will not endure the winter weather. The most common cause of failure to produce satisfactory plants is the sowing of seeds too thickly. Sweet peas may be sown in clumps or in rows at a depth of one inch and six inches of space should be allowed between each plant.

The young plants need training on small sticks, when they attain a height of six inches, afterwards being trained on taller stakes, trellis, or wire supports. To increase the size and number of flowers the plants should receive a liberal supply of water during dry spring weather, and will benefit largely by an occasional watering with liquid manure. The flowers should be cut regularly or the season of blooming will be considerably reduced, the production of seed being the signal of cessation of blooming. Plants will flower during the greater part of summer in moist and cool districts and situations.

In addition to the ordinary sweet peas that attain an average height of about six feet, there are two other types known as "Cupid" and "Bush" sweet peas. These are dwarf-growing types; the first named grows to a height of only six inches, and the latter eighteen inches. They are useful for edges of borders, but on account of short flower stems are not as popular as the tall varieties.

The perennial kinds are propagated from seeds, divisions, or cuttings of the young shoots in spring under a bell glass. Seeds should be sown in pans or boxes early in summer, and may be transplanted in the following spring. Lathyrus latifolius and its varieties do not produce seeds freely, so propagation from divisions and cuttings is resorted to as a certain means of increase. Cuttings when rooted may be grown in pots for the first season, or may be planted at once where it is intended they should grow. They produce their growth during spring, bloom during summer, and die down to the ground during autumn. They are suitable for clumps in the gardens, and for covering a trellis or breakwind. A deeply worked well-drained loam is suitable, and they may remain undisturbed for several years. Lathyrus pubescens is raised from cuttings or seeds. Plants from pots may be set out at any time during the season of active growth. They thrive best in a stiff loamy soil and require a position on an open trellis, where the shoots should be trained as growths develop.

Many of the older varieties of sweet peas are unworthy of culture in comparison with new varieties of the same color, and may be discarded with advantage, as the seeds of the better varieties are offered at cheap rates. A good collection should include Helen Lewis, Gladys Unwin, Mrs. Alfred Watkins, Nora Unwin, Frank Dolby, Queen Alexandra, Evelyn Byatt, Romolo, Piazzani, Black Michael, Helen Pierce, Henry Eckford, E. J. Castle, Countess Spencer, Mrs Walter Wright, Miss Willimott, Black Knight, John Ingman, Dorothy Eckford, Hon. E. Kenyon, Navy Blue, and Earliest of All, the latter being the earliest sweet pea. Perennial kinds :—Lathyrus latifolius, and the white variety albus, Pink Beauty, splendens, grandiflora, and pubescens.

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Bedding Plants, Where and How to Use Them.

[By Alois Frey, in 'Florists' Exchange.']

Riding through parks, along boulevards and country roads, speeding in trains through villages and towns, all over the country, passing the magnificent palaces of the wealthy with their beautiful lawns and the humble cottages of the poor surrounded by modest yards, everywhere the eyes meet the brightness of flowers and richly colored plants, which impress upon us the popularity and universal love for bedding plants.

There is such a large variety of these plants from the smallest annual like portulaca to the stately sub-tropical plants, and also the perennials must not be forgotten, for they figure in various effective displays. Then we have tulips, hyacinths, daffodils, etc., for early Spring flowering. No garden need be without flowers from the time the dainty little crocuses peep out of the ground until late in the Fall.

No matter how small the purse, enough seed can be purchased to obtain a very harmonious and artistic effect, as well as a continuous season of flowers. It is not the means of being able to procure a large number of choice plants, but it is the good taste and skill of the designer, who understands how to make an arrangement, to harmoniously and discriminately combine the various colors with immediate surroundings, no matter how inexpensive, that appeals to the lover of nature with all its art and beauty, and this is what we are striving for more and more every day.

The average florist who deals in bedding plants should by all means give this particular subject thorough study, in order to be able to assist and educate his customers, who in most cases appreciate such advice and instructions in regard to arranging and planting their gardens so as to present a beautiful picture. It requires just as much artisiic judgment and ability to accomplish this, as the painting of a picture on canvas. The designer must show individuality and know exactly what proportions the plants will attain, how soon they will be fully developed, also how the colors will blend together; in fact, he must see the finished picture before him when he designs his plans. The sooner we commence to understand how to arrange these beautiful gifts of nature the better, the sooner we make the people of our grand nation happier. We have everything to do it with: now let us understand how to do it.

To cover the subject best I have divided it into two chapters, as the title of this article indicates: 'Where to use them and how to do it."

Proper Selection of Place First Essential

The proper selection of the place for the floral display is first to be considered; a place where it will be properly effective is just as important as the execution of the planting, as this takes a definite part in the entire scheme. Locality, building and size of grounds must be taken into consideration. The smaller the place, the simpler should be the display. It is so easy to overcrowd a small front lawn, whereby the proper effect is entirely lost. Large places in proportion will have more elaborate plantings and the artist will have occasion to plan special features such as courtyards, parterres, sunken gardens, Italian gardens, etc

The front of a building is almost alwrys selected for the display, which is generally formal, and, if the space is limited, a narrow border of plants adjoining the building will be sufficient, with perhaps one or two beds on the lawn proportional to the latter. There should always be plenty of green grass to offset the beds. The backyard, as a rule, is very much neglected and in many instances unsightly; here I would advocate to have a grass plot with a border plantation. How much more cheerful one would feel looking into a well kept yard then at a lot of rubbish.

Places of larger dimensions with their beautiful landscape effects must be treated more in detail, here we have an opportunity to lay out in connection with residences, conservatories, and public buildings, courtyards, parterres, rose garden, etc., which as a general rule are part of the architectural scheme and in harmony with the style of the building.

In the last few years Italian gardens have again become quite popular and these especially set apart from the rest of the landscape must be treated by themselves; they are very set and usually contain considerable color well blended together.

Besides the forms of special treatment already mentioned we also have other flower gardens, which give an opportunity for a larger variety of flowering plants in the line of annuals, roses, perennials, etc., which properly arranged make a brilliant effect without interfering with the more subdued and restful landscape.

Parks and Factory Grounds.

Public parks especially are a great field for floral displays, and although some authorities on landscape gardening do not favour them, I believe the public fully appreciate flowers; though the utmost care must be taken not to let them run wild all over the park, but keep them in the vicinity of buildings or entirely away and screened off from the quiet landscape. Boulevards also and small squares can be most admirably brightened with the ornamentation of flower beds.

Last year at the convention in Drayton, Ohio, sll our members had the rare opportunity of seeing how the surroundings of a factory can be laid out in a most praiseworthy manner; there our bedding plants brighten daily the minds of thousands of people.

Flower Boxes.

How many people are not fortunate enough to possess a home with a lawn and flower beds. There is no necessity to deprive themselves of nature's gifts, but they can enjoy them in a more modest way, by keeping flower boxes, which no matter how obsoure and unassuming the dwelling, give it a homelike air and enliven the aspect of many an otherwise sombre home.

On the other hand, many beautiful residences rely solely upon piazza boxes for their floral display, and exquisite results can be obtained in this manner.

In Cemeteries.

Finally a few words should be devoted to the homes of our loved dead. There is nothing more soothing to the grief-stricken heart than the sight of well kept cemeteries, bedded with appropriate flowers speaking the language of peaee and rest.

Suggestions for Using.

These are the many and varied ways

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to which the bedding plants lend themselves; there still remains another problem to solve, viz., "how to use them." Here skill in artistic arrangement and harmony of colors is put to a severe test. Starting with the beginning of the season the various Dutch bulbs are the first ones to attract our attention. They are easily cultivated and therefore most appropriate for the amateur. Exquisite effects and color schemes can be carried out; although their duration of bloom barely reaches more than four weeks, I think they make the most striking display of the season. Only the purest and clearest colors should be selected. Off colors and the peculiar magenta shades are hard to match with pure colors and are best planted by themselves, or far enough distant so as not to detract from them. Mixed beds containing a number of varieties look very well, but beds of all one color show by far better taste. Where a number of beds are planted, greater attention must be given to work out a harmonious color scheme. Pink, white and light blue blend admirably; next comes yellow, then red and yellow and the various reds. It is a great deal more pleasing to the eye to let the colors run into each other by degrees than to create too big a contrast. Colonies of crocuses, snowdrops and scillas, singly and several together, irregularly scattered on the lawn, look very charming.

Pansies, bellis and myosotis are also extensively used. Although the pansies come in a multitude of colors, they are mostly used mixed and often with Bellis perennis as a border. Little advantage has been taken of working out color schemes with pansies, and yet if we stop to study their rich tints, tints which I think cannot be found in any other plant, the possibilities are wonderful.

Following these come the Summer plantings with cannas, geraniums, heliotrope, begonias, petunias, coleus, acalyphas, abutilon, salvias, verbenas, and a great number of other plants too numerous to be mentioned.

Almost all bedding plants thrive and flourish best in full sunlight except tuberous begonias and fuchsias, which do best in half shade, where there is plenty of indirect light: other plants, like some of our hardy palms—phœnixes, latanias chamærops—the various fibrous rooted begonias, like semperflorens, Vernon, Schmitti, and fancy leaved caladiums do well under both conditions.

The soil for cannas musas, ricinus and Caladium esculentum should be very rich, their growth will be so much more luxuriant; while the rest of the plants, like geraniums, begonias, verbenas, salvias, cuphea, ageratum, etc., also need enriched soil. Care must be taken not to use too much fertiliser: this will result rather disastrously and the plants will show an abundance of foliage in place of flowers.

Bedding plants before set out in their Summer quarters should be properly hardened off, they should be exposed freely to the air and sunlight at least two weeks before the planting commences. Nothing serves this purpose better than the hotbed, no matter how much some of the growers are opposed to this sort of cultivation. It is true the cost of labor is somewhat higher, but the superior results obtained fully justify the expenditure made, and plants hardened off in this manner suffer but very little in transplanting.

We have plants of every desirable height, from two inches up to eight feet, some with a wealth of flowers, others again with richly colored foliage, some with coarser, others with more graceful foliage.

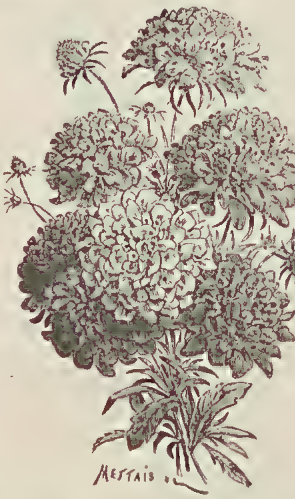
Consider the Sky Line.

In the arrangement of planting one great object, which is one of the great principles in landscape gardening, is in many cases lost sight of, viz., the consideration of the sky line. Especially in large border plantations this should be applied: here we have tall plantings broken with lower ones, until they finally run out to very low plants at the edge. In fact, every bed, as well as in larger displays, the relation of one bed to the other should be treated in this way. While the beds are all more or less formal, they should not appear stiff, every plant should have plenty of room for full development and where a number of varieties are used in one bed, the tall ones should be massed, but here and there one should rise above the lower ones, so as to present a loose and pleasing arrangements in this manner every plant will show it, valuable points more advantageously. For example, a bed planted only with Ficus elastica would look very stiff, but intemingled with the graceful Grevellea robusta and a border of ivy, it would lose this stiffness and present a very pleasing effect. This shows that by careful study we can improve the bad points of one plant with the good ones of another.

Particular stress should be given to the selection of the various tints, blending richly colored foliage tastefully with the more gorgeous tinted flowers, so as not to create too big a contrast. Beds of solid colors, alternating with some of less contrast, will harmoniously tie the entire display together and this will help greatly to achieve the desired plan. It is in the designer's power to present a very brilliant or a very quiet picture according to the scheme that is required.

Quiet and restful effects are worked out by using tints of various blues, white and grey, variegated, glaucous and bronze foliage with a little touch of red, and Anthericum vittatum var. punica, Granatium pumila, Abelia rupestris heliotrope, Plumbago capensis, cœrulea and alba, Phyeglius capensis, santolina and Abutilon Savitzli lend themselves well for this purpose.

Much more could be said on the subject, but, in my opinion, one runs no risk of failures by adhering to the points laid out in my modest essay.



Sweet Scabious, Large-flowering, Double.

Showy free-flowering plants, sweet-scented, producing a fine effect in shrubberies and mixed borders

ROSES

While other departments of floriculture have made wonderful progress during the past ten years, in none of them has it been as great as in the winter forcing of roses, and to-day hundreds of large establishments are devoted to this work, while every small florist has his rose house, and the sale of cut blooms generally equals the amount received from all other flowers combined.

Although it is true that roses, to be successfully grown, require careful attention, it is not true that there is any wonderful secret that one must acquire in order to grow them, and, while the inexperienced rose grower cannot expect the highest success, it is hoped that if the directions here given are carefully followed many mistakes may be prevented. The work of the rose grower generally begins with the propagation and growing of the plants, and therefore we will commence with that operation and follow along with the various steps as the season advances.

Rose plants for forcing purposes are generally grown from cuttings of the new wood. The rule generally given for learning if the plants are in proper condition to be used for cuttings, *i.e.*, when in bending a branch the wood snaps, does not hold for roses, as cuttings should not be made until the buds in the axils of the leaves have become firm and hard. Some consider that the lower buds on a stem are in good condition when the flower buds are ready to be cut, while others believe that the best time for making the cuttings is when the buds begin to show color. At any rate, the cuttings should be made before the leaf buds begin to swell. The cuttings made as soon as the buds have formed and the wood has lost its succulent nature, will root quicker and a much larger per cent. of them will form roots, or 'strike' as it is called. If the variety is a new and choice one the blind shoots or those that have not formed flower buds, are often used for making cuttings. While it may be done occasionally without marked injury, if persisted in the tendency will be to develop plants that form few flowering stems, and the results will not be satisfactory, so that the continued use of the blind shoots is not to be recommended.

When the stems have long internodes, and particularly if it is a new sort, a cutting should be obtained from every good bud, but those at the lower part of the stem and all at the upper portion that are to any extent soft and succulent should be rejected. The cuttings of varieties with short joints should contain two or more buds. Cuttings should be from 1½ to 3 inches long, with one bud near the top at any rate and with the lower end cut off smoothly at right angles with a sharp knife. If the upper leaf is large about one-half of it should be cut away and the other leaves (if any) should be rubbed off.

The cuttings should be dropped into water to prevent their drying out, and as soon as possible should be placed in the propagating bed. This should contain about four inches of clean sharp sand of medium fineness, and should have heating pipes beneath to give bottom heat. Set the cuttings in rows about 2 inches apart and three-fourths of an inch in the row and press the sand firmly about them. At once wet them down thoroughly, and if the weather is clear and bright the beds should be shaded during the middle of the day for the first week. The propagating house should be kept at a temperature at night of 58 or 60 degrees with about 10 degrees more of bottom heat. During the day it should be well ventilated to keep up the bottom heat and thus promote root development and to admit fresh air, but a temperature 10 degrees higher than at night is desirable.

In about three or four weeks with proper care every cutting should be rooted. The requirements for success as noted above are:—Good cuttings, clean sharp sand, a proper temperature, shading when necessary, and an occasional wetting down of the bed in order that the cuttings may not any time become dry. If the house is inclined to dry out, or if the weather is bright, the cuttings as well as the walks should be sprinkled occasionally and the ventilation should have careful attention. It is best to use fresh sand for each batch of cuttings.

When the roots are three-fourths of an inch long the cuttings should be potted off into 2 or 2½ inch pots, pressing the soil firmly. The best soil for the potting of rose cuttings is made of equal parts of leaf mold, or decayed pasture sods, and garden loam, with a little cow manure and bone meal, and sand in proportion to the heaviness of the soil. After being potted the cuttings should be placed in a

MRS EDWARD MAWLEY.

house with a night temperature of a little less than 60 degrees. They require the same care as other plants, careful watering with an occasional syringing to keep down red spider, proper ventilation, and an avoidance of draughts and direct sunlight for a few days, being the main things desired.

Unless tobacco stems are strewn on the beds it will be necessary fo burn tobacco stems once or twice a week in the house or syringe them with tobacco water. From the time the cuttings are potted off until they have finished flowering and are ready to be thrown out or rested they should be kept growing, every precaution being taken to avoid a check if the best results are desired. Some prefer to grow the plants rapidly until they are in four-inch pots and then give them a rest. As soon as the roots have filled the pots and before the plants become pot-bound shift to 3 or 3½ inch pots. If they have good care the first batch will soon fill 4 inch pots and will be strong enough to plant in the beds for early flowering, while the others as they come on can be re-potted and will soon be large enough to be transferred to the beds. Only strong well-grown plants should be used. By early planting not only can a large crop of blooms be secured during the summer, when there is a good demand at a fair price, but the plants will be so strong that they will be able to give large crops during the autumn and early winter, when they are most needed.

Plant Notes.

THE GLADIOLUS is a native of South Africa, Western Asia, and Southern Europe. It is indispensable wherever known. It is easily grown, succeeds on any soil and is not liable to the attacks of insect pests or fungus disease. They flower at different seasons—some early, some medium, and others late—so that a succession of flowers may be kept up nearly all the year round. The colors are of almost every shade, and very rich and brilliant. It may be planted ten inches deep and left in the bed for years, until it gets too close to the surface. Every year the new bulb forms on top of the old one, so it rises about an inch annually, If a late frost cuts the young sprout to the ground it continues to grow just the same, and is not discouraged by being cut back repeatedly. If the bulb is placed wrong side up it grows about as well; and if it has to stand in water for days, or endure drouth for months, it will make the best of its opportunities, giving an abundance of bloom. When the first few flowers open, the spike may be cut and kept in the house as well as on the plant, giving constant bloom for one or two weeks, according as the weather is warm or cool. As a flower to ship, it is unequalled. In regard to their culture, the bulbs must not freeze at any time. They may be planted and covered six inches; this will prevent their blowing over when in bloom. While growing the gladiolus needs the same care that other crops do. It is not well to plough under rank manure. but it may be put on the surface after planting. Other things being equal, a bulb is valuable in proportion to its vertical diameter. A bulb which has not bloomed is roundish or conical, but a thin, watch-shaped bulb has bloomed and possibly ripened seed. A conical bulb three-fourths of an inch in diameter will produce as fine a spike as a larger one and will cost much less. Cutting off the spike when the first flower opens, without cutting the foliage, relieves the drain on the bulb and allows it to grow larger and thicker. Take up the bulb, cut or break off the tops and spread where they will dry. Then they may be put in the cellar, not over four inches deep, in boxes, crates or baskets. After two or three weeks they may be cleaned, the roots and the old bulbs removed. It is not best to keep them too near the surface. We cannot determine the value of a gladiolus by weight, measure or chemical analysis. When it appeals to our taste we call it beautiful and admire it, although sometimes we can hardly tell why. However, there are certain characteristics that are generally conceded to be desirable, among which are the following:—Healthy, vigorous growth, with tough foliage not easily broken by the wind. The leaves should be ample so as to build up a large bulb, and if they grow upright, without drooping, so much the better. The spike should be tall and straight, with ample capacity to take up water to sustain a good number of open flowers. The flowers should face one way, and be so arranged on the spike as to make a broad and compact appearance without crowding. The size is not so important, but most people prefer good sized flowers. It is very desirable that the petals be thick so as not to wilt easily. Color is of great importance; if that be unsatisfactory, all other good points that it may possess go for nothing. Whether light or dark, let it be clear and pure, not muddy nor faded looking.

GLADIOLUS.

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Tuberous Begonias.

This most beautiful class of handsome flowering plants has been wonderfully improved during the last few years. They are invaluable for the decoration of the greenhouse or conservatory, where they produce a magnificent and dazzling display. Their handsome large flowers, often measuring 4 inches in diameter, are of the most brilliantly varied and delicately beautiful shades, from the purest white to the deepest crimson including yellow. bronze, rose and other intermediate shades. These Begonias are also eminently adapted for bedding. and are largely used in England and elsewhere for this purpose.

Double Tuberous Begonia

Begonia, International Prize Tuberous. Single and Double. An unrivalled strain, saved from the best selected blooms of the finest English, French and German large-flowered hybrid varieties; of superior size, form and colour. Sealed pkts., 2s. 6d.

Begonia, Hybrida Marmorata fl. pl.—The plants are of sturdy habit and produce upright-standing, very double flowers of great size (up to 4½ inches in diameter), with beautifully spotted and marbled petals. When in full flower these robust free-blooming plants, with their ample dark green foliage are most attractive. 1s. 6d. pkt.

Begonia, Single, Tuberous-rooted, choice mixed. 1s. pkt.

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Gloxinia.

Greenhouse or stovehouse perennials of great beauty. The most lovely combinations of colour are found in their large campanulate flowers, which stand about 6 inches above thick grand leaves of the finest silky or velvety texture. The seed is easily raised in a moist heat. Sow from September to December. They thrive in a warm, rather close atmosphere. requiring plenty of moisture at the root, but little or no watering overhead, which is likely to rot the flowers and leaves. Avoid cold draughts of air. The soil must be light and rich. and well drained.

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Gloxinia, Hybrida Grandiflora Crassifolia. Finest exhibition varieties. mixed colours. 1s. and 1s. 6d. pkt.

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Gloxinia.

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LANKY CROTONS with tops of good color can be used to advantage in the filling up of fireplaces and in the formation of plant groups in any part of dwellings. Dracænas of like character can be used in a similar way. These plants work wonders when skilfully arranged along with palms and other plants of a dull color. These can be and dracænas will come in handy later en for furnishing propagating material for fresh stock. Any of the above noted plants not needed, and not good as specimens can be planted out in the open and taken up later for stock.

FITTONIAS, marantas, and small well colored plants of Pandanus Veitchii make up exquisitely when used together in dishes or baskets. Panicum variegatum, when used sparingly, helps to color up such work, besides giving it a light, graceful finish.

A NEW RACE OF PELARGONIUM.—The German hybridists have in recent years succeeded in calling into existence a race of pelargoniums of a self-supporting bushy habit, wonderful coloring, and a freedom in flowering that is quite remarkable (says the English Horticultural Trade Journal). These have found great favor as market plants. The most successful hybridists so far are Hrn. Max Bürger, of Halberstadt, and Hrn. Faiss, of Fewibach, near Stuttgart, and both of them showed plants at Mannheim. One of the finest of Faiss' varieties is Deutscher Rhum (1906) ; the flowers have the coloring of the petals of Cattleyia labiata, with two large purplish magenta-red blotches. Equally good, and belonging to the P. Odier section are the three following varieties, viz., Andenken an Friedrich Schiller (1905) ; the flowers of a bright flame color with five sharply marked black patches, a striking very free flowering variety, and first-class market plant ; Wolfgang Goethe, having flowers of dark purplish carmine with five clearly defined, deep violet spots, large and slightly waved ; Ludwig Uhland (1906), large circular blooms, of an aniline red color, also decorated with five dark violet patches, very peculiar in regard to the color ; the growth of this plant is moderate as regards the height, and robust. A conspicuous representative of the P. diadematum class is Wilhelm Hauff (1906), the flowers light purplish rose-pink with white stripes and chestnut-brown spots in the two upper petals, extremely abundant bloomer, strongly waved blooms, and large truss. Another of the Odier pelargoniums is Ostergruss, a novelty of 1905, one of the earliest and latest to bloom. The colors are bright amaranth, spotted black on the five petals.

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NEW VARIETIES IN CANNA. – Herrn. Pfitzer has two new canna varieties which by reason of their dark colors are very attractive. and should be brought to the notice of our readers. W. Pfizer describes them as follows :—Mephisto. leaves deep dark green, flowers blackish purple blood red with amaranth, velvety, one of the darkest colored varieties of the day ; Schwabenland, leaves brownish-red marbled dark green, flowers grand, four petaled, velvety dark red flower spikes, loose, and graceful, well elevated above the striking foliage.—Mollers' Deutsche Gärtner Zeitung.

PRIMULAS. – There are some plants considered of little value commercially, not from any want of merit in the plants themselves, but because they are usually so poorly grown that they are practically insignificant and worthless, and this can be said with more truth perhaps of primulas than any other plants. There are but few things more unsightly than poor starved primulas with foliage and flowers but half developed ; on the other hand, if primulas and cinerarias as well are grown in such a manner that all they are capable of is brought out there is no question but that their cultivation is as profitable as that of many other things that take more time and labor to bring to perfection. Don't starve them for want of pot room ; don't let them get dry ; keep them as cool as possible.

COTTON-GROWING IN NORTHERN TERRITORY.—The Northern Territory of Australia consists of 335,116,800 acres, and has a coastal frontage of 1,200 miles to the Indian Ocean, and in the immediate neighborhood of Port Darwin, which is inhabited principally by Chinese, sugar-cane, cinnamon, ramie or vegetable silk hemp, cocoanuts, rubber, and many other plants of economic value are successfully cultivated. The population is small in the extreme, containing only 900 whites and 2,700 Chinese, in addition to the aboriginal population. There can be no doubt that the climate and a large portion of the soil are eminently suitable for the cultivation of cotton—so much so, that cotton has disseminated itself without the help of man, and may also be considered as part of the North Australian flora, and is found for nearly 400 miles inland. The fact that of the eight species of gossypium or cotton seven varieties are found in the Northern Territory, while two occur only in Queensland, South Australia, and Western Australia, and one only in New South Wales, shows conclusively that the Northern Territory is the natural home of the cotton plant.

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The Orchard.

Codlin Moth Spraying.

[BY GEORGE QUINN].

As soon as the flowers fall from the apple and pear trees, spraying should be applied to them to prevent attacks of the first brood of codlin moths. There are various arsenical compounds which have proved useful against these insects. amongst which are Kedzie's arsenite of soda in limewater ; paris green, which is arsenite of copper . and arsenite of lead There is often difficulty in obtaining paris green in a pure state. and, owing to the great rapidity with which it sinks to the bottom of the spray-vessel it is more troublesome to distribute evenly than the other two. In this State Kedzie's formula has proved. when properly applied, to be very effective. In Victoria a great many growers favor arsenite of lead spray Although both of these preparations may be bought already made up, should any fruitgrowers wish to prepare them themselves, they can do so by the following processes .—Kedzie's Formula—Boil 1 lb. of white arsenic with 2 lb. of washing soda in a gallon of water until the whole is dissolved. which will take from twenty minutes to half an hour. This should be securely bottled, and labelled "Poison," and at the same time be kept away from the reach of children and thoughtless persons. For use as a spray take from 6 to 8 lb. of freshly-burnt lime. and slake it in a few gallons of water. When slaked strain out any unliquefied sediment ; then pour in 1 pint of the arsenic solution, and after it has stood and been stirred for some little time make up the bulk for spraying to 40 gallons. The formula for making the arsenite of lead spray, as given by the Victorian Journal of Agriculture, consists of boiling 1 lb of arsenic and 2 lb. of washing soda in half a gallon of water until they are dissolved Then 7 lb. of acetate of lead is dissolved in one gallon of warm water. When this has cooled down, the arsenic-soda solution is gradually stirred into it until both are thoroughly mixed. This will give about 12 pints of stock solution, and 1 pint is used in 30 gallons of water. It is needless to say this stock solution should also be labelled "Poison" and kept out of reach. It may be mentioned that the arsenic solution and the lead-acetate solution should not be mixed warm, or great effervescence will result, and the compound is apt to waste out of the vessel. It may be worth while repeating that all of these arsenical compounds are insoluble in water when they are properly blended for spraying, consequently they must be constantly agitated whilst being applied through the spray-pump, because it is the fine particles suspended in the water which form the remedy. Should they be improperly compounded and any arsenic remain in solution the foliage of the tree to which the spray is applied must inevitably be scorched. It may be worth repeating that the reason why it is no use spraying with arsenical compounds for codlin moth before the fruit is set is because this insect does not emerge in the moth form from its winter stage to deposit eggs until the blossoming of the trees takes place; consequently any application before this period would be a waste of labor and material. The reason why the fruits should be sprayed as soon as they are formed is not so much that they are attacked almost instantly by the caterpillars, because the eggs have to be deposited, and a week or two elapse before the caterpillars start to feed upon the fruits, but because it is necessary to force some of the poisonous spray into the calyx cups of the upstanding, newly-formed fruits. The fruits grow rapidly, and the calyx lobes close over these cups sufficiently to prevent the ingress of any future spraying, but not sufficiently to prevent the small caterpillar finding its way in. and thus puncturing the fruit with impunity. If the fruits are coated with the poison, the young caterpillar usually takes in a small portion with its food when puncturing the skin. As the moths which emerge from the winter stage hatch out irregularly over a period of many weeks from the blossoming of the tree onwards, and as the young fruits rapidly swell and leave exposed portions of the surface uncoated by the first spray, it becomes necessary to repeat the operation very quidkly so as to aircumvent these insects. Consequently the second spraying is given from a week to ten days after the first, which means in a fairly large orchard that as soon as the first is completed the second is undertaken. About a fortnight after the completion of the second spraying a third is applied. As a rule, these three applications tend to intercept most of the first brood of insects, but it becomes necessary owing either to an influx of moths from other places or from the few that have escaped capture or poisoning to apply further sprayings after Christmas, and for late-ripening kinds, such as Stone Pippins, Rome Beauty, and Rokewood apples, and the later varieties of pears, a spraying given well into February is very effective. I would strongly urge growers not to neglect the early sprayings and imagine that Providence is going to favor them very much beyond what has occurred in other years. It is no use spraying fruits after the caterpillars have found a lodging therein. The spraying is a preventive pure and simple. For the late spraying, arsenite of lead, owing to not disfiguring the fruits, should be worthy of a trial.

During the last twenty years 27,000 acres of hops have been grubbed up in England, with a loss to British labour of about half a million a year.

The Dairy.

Caring for Milk.

The secret of keeping milk is to cool it quickly, or heat it to a Pasteurizing or germ destroying temperature. In a small way the former can be accomplished by setting the milk can in freshly-pumped water and stirring frequently. Well water is, however, seldom cooler than 50 deg., so ice water is almost a necessity. In addition, a cooler and aerator should be used, in which the milk is made to flow slowly over a cold surface into a receiving can. Milk thus cooled will remain sweet a long time.

New skimmed milk was totally unknown, not in existence, before the advent of the centrifugal cream separator. Many persons incorrectly think of separator skimmed milk as the same old product, left after taking the cream from the top of the milk, but new skimmed milk, from the separator, is a totally different thing from old skimmed milk from pans or cans. New skimmed milk has in it the sweet nutritious sugar of milk, while in the old skimmed milk this wholesome sugar has turned to unwholesome lactic acid or vinegar. Lean persons take sugar to get fat; fat persons take vinegar to get lean; so one difference between new skimmed and old skimmed milk should be apparent. New skimmed milk, fresh from the separator, has had the microbes and bacteria of disease removed from it by centrifugal force, while old skimmed milk, left after cream has been allowed to rise in the old way, has been a feeding and breeding bed for these same germs.

Think of the opposite character of the new skimmed milk, fresh from the separator, and the stale, flat, ready-to-sour, gravity skimmed milk; you will agree that each should have so distinct a name that they would never be mistaken for one another. The one should have a name signifying pure, sweet, nutritious, wholesome food; the other might be called microbactovinegarus—indicative of the microbes and bacteria in it, and the change of the milk sugar to milk vinegar.

Milk exposed to the air, as in setting, will absorb any evil odour that may be in the apartment; and in the cleanest apartment there is more or less odor and dust. The centrifugal separator almost entirely eliminates this exposure of the milk, thus producing sweeter, purer, better keeping milk and cream, and in butter of better quality. Only perfectly sweet, clean utensils should be used about the dairy. Milk should be drawn by clean hands (not wet with milk) into clean pails, from cows having clean udders, and poured through a double-thick or triple-thick cheese-cloth strainer. This is only fair traatment for the milk at the start. Whether the milk is to be set or separated, the operation should be immediate. Milk is not improved by "standing around." Milk enemies never rest for a moment.

Caring for Cream.

The centrifugal separator, more nearly than any other method, secures all the cream or butter fat from the whole milk. This is an absolute fact—experiments will at once prove it. Chemical tests show only a trace of fat left in separator skimmed milk. A properly constructed, properly operated centrifugal separator should not leave more than three one-hundredths of one per cent. of the butter-fat in the skimmed milk, whereas gravity, or old method, systems lose from one-quarter to one-half of the cream. It is possible, with the best separator, to reduce this waste to below one one-thousandth part of the butter fat. This means a difference in favor of the separator of at least three-quarters of a pound of butter to every 100 pounds of milk.

With a good market at hand a very profitable way of disposing of dairy products is cream selling. Cream should command practically the full price of the whole milk required to produce it, thus leaving the sweet skimmed milk on the farm as a by-product of much value. Cream that is to be sold should be cooled to 40 or 50 degrees, immediately after leaving the separator, and held at that temperature until delivered. If it can be kept below 40 degrees it will improve in body by standing one or two days, becoming heavier and firmer and showing little or no disposition to turn sour. In large refrigerating establishments cream is often held a week or two for making ice cream or confectionery. Such cream whips to advantage, separator cream being superior for that purpose.

Cream should be cared for as soon as the separation is finished. If there is froth on top it should be stirred down, otherwise it is liable to become bitter and injure the butter. If a simple bowl separator is used there will be little or no froth and the cream will have a smooth, velvety feeling, thus being in best condition for butter making and commercial purposes. If the separator has a complicated bowl, in which the milk passes through numerous narrow openings and over much metal surface, the cream will be quite frothy; this froth will not stir down readily, for it will consist of partially churned butter. It is best to remove this froth entirely, otherwise the butter will have a bitterish, metallic taste. There is loss by removing this froth from cream obtained by complicated bowls, but the quality of the butter makes it necessary. If for no other reason the complicated separator bowl should be avoided, as this loss will saon amount to large figures.

For butter-making cream should be kept in a clean, well-ventilated place, wholly away from odors. Immediately after coming from the separator it should be thoroughly cooled, then gradually brought to a temperature of 60 to 70 degrees and frequently stirred. In this way it soon ripens. The ripening process is hastened by the higher temperature; but when the temperature is above 70 degrees there is danger of hostile fermentation. When churning is done twice a week a temperature of about 60 degrees is about right for ripening. Stirring three times a day is essential to good ripening. New cream should not be added to old within twelve hours of churning time, as it has not time to ripen. If cream is to churned less frequently, say once a week, it is well to keep the temperature as low as possible until a day or two before churning; if it is not then sufficiently ripe it should be heated to 70 degrees, afterward, at churning time, the temperature being lowered. The proper ripeness of cream may be determined by acid test. Experienced butter makers, however, depend largely on aroma, appearance, and consistency.

The ripening process, as explained by science, is the development of certain species of bacteria or living organisms. These germs are propagated at will, are bought and sold commercially. They help in butter-making somewhat as yeast helps in bread-making. It must not be supposed, however, that these commercial starters will insure good butter where any vital details are at fault; they simply insure a fair, quick start. Commercial bacteria are identical with those growing naturally in the finest, cleanest dairies, where all conditions favor the making of high-grade butter.

The ideal way to dispose of the product of the dairy is to market the cream or butter and keep the skimmed milk at home. The fat carries no fertility away with it; the skimmed milk can be profitably converted into veal and pork, and a large manure pile will be left.

Molasses feeds are becoming popular in America. They are made of various mixtures of grains, oat offal, refuse from flouring mills, ground corn stalks, finely-ground hay, rice hulls, malt sprouts distillers' and brewers' grains, cotton seed meal and similar products with 10 to 30 per cent. molasses.

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The Farm.

When is Draining Necessary?

1. Whenever after rain water remains in the furrows or stump holes.
2. When the soil sticks to your shoes or horses' feet and farm tools.
3. Whenever you see water in the footprints of a horse or other animals.
4. When animals sink deeply into the soil.
5. When the rays of the sun form a hard crust on the soil.
6. Whenever after heavy rain the little holes in the ground show more water in them than in other parts.
7. If after rain a stick is put into the ground and taken out, water will rise in the hole.
8 If crops will grow better when the land is gathered up into small ridges

In the first place, we get rid of the stagnant water, both on the surface and below it. Stagnant water has an injurious effect on vegetation, it is deprived of its oxygen, and while it remains in the soil it prevents fresh water from taking its place. Water held in suspension is detrimental to plant life, and must be kept moving; it also opens the soil and lets the air in after it.

Thus, draining resolves itself into keeping the water moving, to prevent its stagnating and souring the soil. No crops, unless perhaps rice and New Zealand flax, can prosper in water-logged land.

Experiments with Barley.

As a result of experiments with barley conducted by the Yorkshire College authorities in conjunction with the Yorkshire Council for Agricultural Education, the following conclusions are drawn by Professor Seton:—

1. Two-and-a-half to 3 bushels per acre seem to be a sufficient seeding of barley for both yield and quality.
2. At Garforth the results from "pickling" have, so far, shown that the treatment adopted may be depended upon as a simple and cheap preventive against smut. One pound of bluestone (sulphate of copper) dissolved in 1 gallon of water, and distributed over 1 sack (4 bushels) of seed, was the amount used. It may be that a smaller quantity would be equally efficacious in preventing smut, and, if so, there would then be less risk of injury to the young plant.
3. For medium-class soils in good condition it would seem that an application of about 5 cwt. of salt per acee improves the yield, and possibly the quality, of barley.
4. On medium class soils in only moderate condition artificial manures can be profitably used. For the production of the best yield and quality a "complete" mixture seems necessary. Such a mixture may consist of the following:—

About 1 cwt. sulphate of ammonia, or a corresponding quantity of nitrate of soda, top-dressed some time after the barley is through the ground, 2 cwt. super, 2 cwt. kainit.

Mulching

The reader will find (says Weathers' "Garden Plants") this expression used many times in connection with the cultural directions given for various plants. I is, therefore, advisable to explain its meaning and value.

A "mulch" or "mulching," in gardening language, means an extra covering of soil, rotten leaves, or manure, either separately or combined, placed over the roots of plants, either after the latter have been newly planted or at any period during their growth when it may be considered advisable.

The advantages of mulching may be summed up as follows:—

1. During the hot and dry summer months it prevents excessive evaporation from the soil, and thus not only preserves the moisture from the roots to absorb, but it also prevents the soil from becoming excessively het by day and cold by night, thus maintaining a more regular temperature
2. In winter it protects the roots from frost, and also keeps the soil warmer.
3. When a rich mulch is applied to newly planted trees and shrubs, it not only has the above advantages, but the manurial matters contained in it are washed down into the soil, and enrich it with food for the benefit of the newly formed or forming roots.
4. A good mulching of rich manure to all kinds of fruit trees after they have set their fruits is highly beneficial in assisting them to swell rapidly and ripen more quickly Once a plant no matter whether a tree, shrub, or annual—begins to de-

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velop fruit and seeds, a demand is made upon its reserve materials. If these are not quite sufficient to meet the demand, it is easy to conceive that the extra food supplied by means of a good mulching will supply the deficiency.

On the subject of winter mulching the "Fruitgrower" remarks :—Do winter mulches do harm or good? This may seem a curious question to many readers, but there is so much difference as to what constitutes a mulch that we are not surprised such a question should be put. Some say winter mulches do harm, that they are cold, or keep the soil cold, and consequently retard growth. Well, that again depends not only upon the nature of the mulch, but the season. What is a mulch? Well, a mulch, broadly speaking, may be made of anything almost, used as a covering around the roots of a tree or bush or on the top of a bed. In summer we put on a mulch to certain crops to keep the roots cool, and that coolness comes from preventing the heat of the sun striking into the soil covered. It retards maturity, and is useful to that end, always provided that mulch is damp and of a lower temperature than the soil itself. Now with regard to the winter mulch: Does it retard growth and do harm to crops? That, to a great extent, depends upon the nature of the mulch and the conditions. For instance, a man claims that a winter mulching of stable manure acts as a cold sheet and retards growth, but, at the same time, he fails to see that a mulch of stable manure may not, properly treated, be itself of a lower temperature than the soil. If not, how can it retard growth? Take our mulch; it is composed of stable manure and loam, well mixed. It would never do to say that the application of such a blanket in winter to the strawberry bed and plant could keep them cold, and thus retard growth. On the contrary, it would protect the rootlets from a very severe and destructive frost, and furnish them with a good supply of plant food at the same time. We claim that the free use of this mulch, made up as it is of short stable manure only and loam, is productive of wonderful results, and especially when put on strawberry beds which are two years old or more. No grower can test this method without seeing that the improvement in the health of the plants and the size and quantity of the fruits are most marked, and when once used it will never be discarded. We quite agree that to throw on a lot of hard cakes of coarse manure, loaded with straw and general refuse, may retard the growth of an asparagus bed if it is done under certain conditions, but even only then. In winter—that is, when wintry weather prevails—the soil is as cold as it can well be, and whether wet mulch is put on or not will not make any difference. In open weather it is well, naturally, for the air and light to act on the soil; that is why such a mulch, if used, should be removed when the weather is open, to induce early growth.

The Poultry Yard.

For explanation of points see previous issues.

Egg Culture.

Why does England import 700,000,000 to 800,000,000 of eggs every year, and pay over £2,500,000 for them? The answer is: That the demand for eggs is steadily increasing, while the home produce is either lessening or stationary in amount.

The importation of French eggs into England has increased to a most incredible degree. It has risen from about 150,000,000 to 700,000,000 annually since 1830, while the value per 1,000 has also increased, until at length British importations cost the nation nearly £3,000,000 sterling per annum.

Egg-culture in France is almost exclusively confined to small farmers, who carry it on in a vigorous and commercial spirit, and chiefly in Burgundy Normandy, and Picordy. Every village has its weekly market, to which farmers and their wives bring their produce in preference to selling it at the farm to itinerant dealers.

A merchant will sometimes buy 20,000 eggs at one market; he takes them to his warehouse, where they are sorted and packed, and possibly sent off the same day to Paris or London.

According to the conditions required by the buyers, the eggs are sometimes counted, sometimes "sized" by passing them through a ring, and sometimes they are bought in bulk. They are sent to England in cases containing from 6 0 to 1,200 each. It is found that the buckwheat districts are those on which most eggs are produced. This is worthy of note by breeders. The production of eggs for market is one thing, and the hatching of them another. Those who have tried artificial hatching and rearing of poultry have arrived at the conclusion that both eggs and poultry can only be produced on a paying scale by the farmers and by people living on small holdings, and this opinion stands to reason. About farmyards and cottages in rural districts hens can pick up food that would otherwise be wasted. Besides, let it be kept in mind that hens like to roam about, searching for seeds, worms, and particles of lime to furnish material out of which the shells of their eggs are formed. If kept in confinement, exceeding care is required to supply the creature with such requisites as their maternal instincts seem to require. What we suggest is that farmers and those possessing sufficient scope for keeping poultry should go far more largely into the business of egg-culture than they do at present. Why should they allow the great egg supply for England to be in the hands of others? The answer, we think, is: That our farming classes generally look down contemptuously on the supplying of eggs for market. It is they think, too small an affair to invite considration.

Too small! Three millions of money carried off by the French!

Is that a trade to be treated with indifference?

Lately, we have been hearing a great deal about women's work, and of how young ladies should employ themselves. Here is something, at all events, for farmers' wives and daughters to set their faces to without the slightest derogation of rank, dignity, or character. Let them take up in real earnest the culture of fowls, if only for the sake of the eggs, which, on a great and remunerative scale, may be produced. Those women who already appropriate a portion of their leisure to this occupation deserve all honor, far more than those who spend hours over fancy work or weeks at the piano with the sole object of gaining a doubtfully valuable musical diploma.

Such refinements are undoubtedly very excellent things in their way, but, carried to excess, they are harmful, and tend to draw people away from many light and pleasant rural pleasures which were the pride of the country-women in times not very long ago.

The Domestic Goose.

Daily use demonstrates what great services the anserine race renders to us; what great and numerous conveniences it affords. For even while living it abundantly supplies us with eggs and young birds for food, with feathers to soften our couch, and with quills as mute interpreters to express the thoughts that arise in our minds. And more, it is a most secure guardian of our persons and our dwellings, far more to be depended upon than the dog.

We apply the term "domestic" to the goose, using only "tame" for the duck to signify a much closer intimacy with and submission to the control of man, and, as a further contrast, the domestication of the common goose like that of the fowl, hides itself, as we pursue it in its remotest depths, and obscurest mists of ancient history. By the Hebrews, as by many modern naturalists, it would be classed generically with the swan, and so be included in their list of unclean birds. Among the Greeks and Romans, it seems to have been the only domesticated water fowl, and appears to have held exactly the same place in their esteem, that it still retains, after the lapse of two or three thousand years, in our farm-yards, and on our commons. Indeed, a modern writer may escape a great part of the trouble of composing the natural history of the domestic goose, if he will only collect the materials that are scattered amongst ancient authors. A very early notice of them occurs in Homer. Penelope, relating her dream, says—

> A team of twenty geese (a snow white train)
> Fed near the limpid lake with golden grain,
> Amuse my pensive hours.

Pope's version is both flat and inaccurate The 'snow-white train,' (I would bet Mr Pope a dish of tey—as he rhymes it—that Penlope's geese were not snow-white, whatever the ganders might be), the 'limpid lake,' the 'pensile hours' are not Homeric, but Popeian. The literal translation of the Greek is 'I have twenty geese at home, that eat wheat out of water, and I am delighted to look at them." We omit the rest of her vision, as little to our purpose, but her mode of fattening them, and her complacent chuckle at seeing them thrive, could not be surpased by the most enthusiastic members of the Royal Agricultural Society. If she entertained her numerous suitors with fat roast goose, it may partly explain why they stuck to her in so troublesome and pertinacious a manner.

It is very natural to inquire whence so remarkable and valuable a bird was originally obtained, but the conclusion generally arrived at appears to be inconsistant, not merely with truth, but even with probability namely, that it results from the crossing and intermixture of several wild species. None of these ancient accounts indicate any such fact, but, on the contary, declare that the domestic goose was in the earliest ages (dating with respect to man) exactly what it is now. The very same argument that was used to show that the domestic goose is a combination of the grey-legged, white fronted, and bean geese, would equally prove that the Anglo-Saxon race of men is derived from a mixture of the Red Indian, the Yellow Chinese, and the tawny Moor. We cannot therefore help suspecting very strongly that we shall err in referring the parentage of the common goose to any existing species. Mr Yarrell hesitatingly says that 'the grey legged goose is considered to be the origin from which our valuable domesticated race is derived,' and instances the union of a pinioned wild grey-legged gander with a domestic goose that had been assigned as his mate. But those who have kept many different species of geese together well know what unaccountable attachments they are frequently forming, and they are quite as likely to pair and rear young with individuals of a race apparently the most alien to themselves as with their own stock. Indeed, amongst geese it will be difficult to define the limits of species at least if the fertility of hybrids be the test.

But the supposition that all our domesticated creatures must necessarily have an existing wild original, is mere assumption and it has misled, and it is likely to mislead, investigators as far from the truth as did the old notion about fossil organic remains, that they were Lithoschemata, as Aldrovandus has it, sketches in stone, abortive efforts of nature. imperfect embryos instead of fragmentary ruins of a former state of things Some naturalists seem already to have had misgivings that such a theory respecting domestic animals is not tenable, according to the Rev. L. Jenyns.

The domestic goose is usually considered as having been derived from the grey legged goose, but such a circumstance is rendered highly improbable from the well known fact that the common gander, after attaining a certain age, is invariably white Montague also observes that a specimen of Anser ferus, which was shot in the wing by a farmer in Wiltshire, and kept alive many years, would never associate with the tame geese. In fact the origin of this last is unknown."

The origin of the domestic goose is indeed unknown, if we look to man or his influence, to have originated so valuable and peculiar a species but not unknown if we believe it to have been created by the same Almighty Power who animated the Mammoth, the Plesiosaurus, the and the Dodo. For let us grant that the grey legged goose is the most probable existing parent of the domestic sort. Now that is becoming a rare bird, and the more scarce a creature in a wild state, the scarcer it is likely still to become.

The Toulouse goose which has been so much extolled and sold at such high prices is only the common domestic, enlarged by early hatching, very liberal feeding during youth, fine climate and perhaps by age

Ducks and geese are largely foragers, and use a large amount of grass in their feed. They are therefore doubly profitable, feeding both in the water and on the land.

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The Biter Bit

The Price Government made no mistake when it sent Major Norton to England as South Australia's commercial agent. Norton hustles like a beaver and is making the conservative Londoner order lamb and eggs in his sleep. The Fogtown merchant who deals in Danish and Russian eggs scouted the idea of the final glory of the hen being landed in decent condition from far off Australia, and declined to stock the article. Then the S.A. agent laid seige to the biggest Russian egg man till he promised to compare samples at his own premises. He reckoned that he and Norton would meet by themselves, and cast an indifferent eye on outsides of the eggs and depart, but Norton knew better than to waste a good advertisement. He turned up with a whole caravan of produce dealers and peessmen, and got to business at once. 'Tell you what we'll do,' he said briskly to the Russian eggest, 'you break six of yours and I'll break six of mine and each man'll swallow his own.' The Muscovite eggist turned pale and backed out. Then Norton swallowed the yolks of six eggs taken ar random from a S.A. consignment and the name of the Russian egg became Mud.—Sydney Bulletin.

The cackle of the hen may not be musical according to accepted canons but the notes her efforts produce always pass current with the grocer.

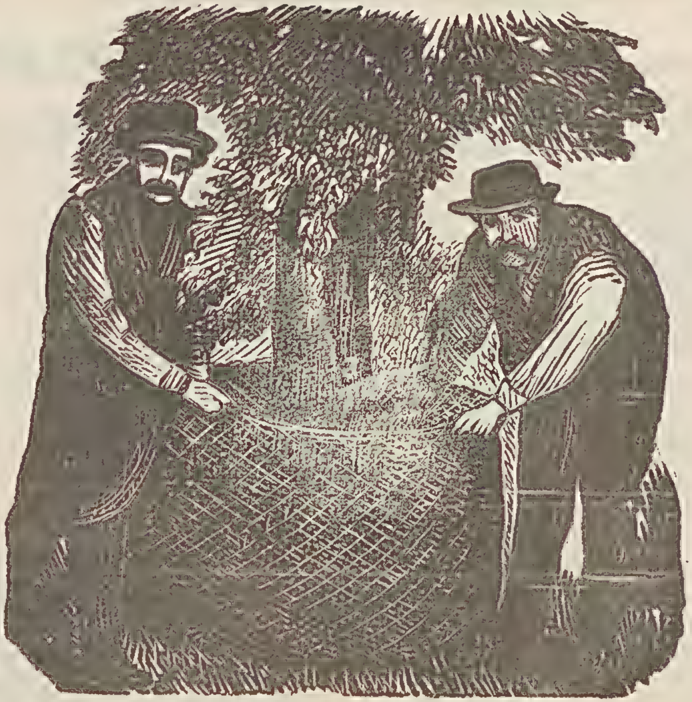
Take care of the late hatches. They will come handy when beef is high and the pork is gone.

Geese are always in demand and bring in a fair price. More should be raised.

Ducks are both popular and profitable with many poultry-raisers.

A small boy once had a bantam hen given him but was much distressed at the small size of her eggs. The explanation of his parents that the bird was a diminutive one afforded him little consolation. In his mother's drawing-room under a glass case was an ostrich's egg which commanded his admiration. It was noticed one day that this was missing from its place; it was subsequently found in the fowl-house near to the nest to which the bantam resorted and a closer inspection showed that there had been pasted on it a small piece of peper with the following words of exhortation and encouragement: Keep your eye on this and do your best.

Exceptional opportunities offer themselves at Roseworthy Agricultural College to those desirous of learning commercial poultry-breeding. The College station with its fine equipment, the facilities for studying incubation, and the splendid collection of birds will give practical work while instruction in theory and general management is given in the lecture-room.



Tree Planting in Germany.

(Translated from the German).

The accompanying picture shows how the firm of H. Henkel, of Darmstadt (Germany) has for years planted its conifera. It shows how the turf right round the packing is lifted out; then how the packing is secured in zinked wire netting. The wire netting has to be left round the packing; it is then very easy, even after some years, when it is necessary to make more room, to transplant again. The zinked wire netting will resist for years the corroding influence of moisture; it will also give to heavier roots, which might want to break through, without interfering with their growth. This procedure, notwithstanding its simplicity, shows so many advantages that it is worth while trying; every garden artist ought to reckon with it. The nurseryman has so much unpleasantness through bad carriage of packages that it is highly recommended to him to do it in zinked wire netting, as demonstrated.

To Correspondents.

Enquirer.—We should advise you to select utility strains of Wyandottes or Black Orpingtons for all-round purposes.

W. B. wants to know what is the best hedge to keep boys out of his garden. We reccomend African Boxthorn; it is an evergreen with an abundance of foliage of quick growth and very thorny, and will if properly attended to produce a good close hedge in less time then any other we know of. If grown from seed the present month is a good time to sow, it is best sown in a bed of good soil and transplanted in the following Autumn. If you wish to save time get them from a nurseryman when the plants are about one foot high.

T. Walker.—The largest number of hens kept in one pen or fowl-house is stated by 'Rural New York' to be 2,000. It would take too much space to describe the house in which surh a flock of hens are kept. In the December issue we will give you an interesting article on the subject.

A sound horse will stand a wonderful amount of work if he has the right kind of care while at it.

It is stated that 22,000 women, mostly the wives and daughters of farmers, have taken agricultural lessons at the New York State College of Agriculture.

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It is only those varieties of Narcissi or Daffodils which produce offsets freely that may be lifted annually, and even with shese it is not absolutely necessary. What is meant by the annual lifting and drying encouraging increase is that by this means it is possible so to separate and plant the offsets that the stock is increased more quickly. To dry bulbs of Narcissi in general after lifting them is not good practice, especially if they are kept some weeks out of the ground. They should be lifted, divided, and planted at once. The fact that your small offsets dried up shows that drying and keeping small bulbs out of the ground is not advisable, nor is the separating and planting of very small offsets according to the variety to be recommended.

◆

Pentstemons comprise a large list of varieties which are useful in the border.

Thermopsis carolina is a pretty border plant with spikes of bright yellow flowers.

Campanula glomerata var. Dahurica is one of the best; the flowers are of a very dark blue color and it is always an attractive border plant.

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Narcissus Tazetta.

Æthionema grandiflora is a very pretty dwarf shrubby plant, which, with its beautiful pink flowers, is very attractive.

Spiræ Aruncus is very showy with its beautiful plumes of white flowers

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December Number of 1907

The Australian Gardener

(A Monthly Journal of Floriculture, Horticulture, Agriculture, and Poultry),

CONTAINS—

The Vegetable Garden—
Operations for the Month

Flower Garden—
The Lily.
Roses (continued).
Plant Notes.
Hardy Shrubs: How to Plant and Treat Them.

EDITORIAL.

The Orchard—
Orange Mulching.
Thinning Apples.

The Dairy—
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A Monster Egg.
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POTATO EXPERIMENTS.
&c, &c., &c.

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All letters, manuscripts, and matter intended for publication should be addressed to the Adelaide Office, corner of Pirie and Wyatt Streets, Adelaide, and in order to appear in the following issue should be posted to reach Adelaide by the 20th of the current month. It is necessary that correspondents should furnish their names and addresses.

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EDITORIAL.

THE December issue of "THE AUSTRALIAN GARDENER" contains useful instructions for vegetable gardeners. As the dry days of the summer appear it is well for amateurs particularly to note closely the order of things to keep the kitchen well supplied with dainty foods for hot weather.

In the flower garden sun scorching heat will bring many disappointments, but while these are always to be reckoned with there are flowers that bloom and thrive under fiercest rays of sun and revel in the heat. The lilies belong to this class of sun lovers and given fair treatment will well repay the trouble. We are continuing our articles on roses, and although the reception days of the queen may at times bring wilted petals, a few days of cooler weather to pick the buds up will bring along a quantity of good blooms.

How to plant hardy shrubs and what to do with them when planted are most useful hints, because there are so many beautiful shrubs that are rarely seen because they are neglected through ignorance. Many shrubs have a straggling habit of growth, and because they are not trained properly the amateur finds it difficult to make room for them in his garden.

For the dairy this month we are introducing a breed of cattle that are not known much here, but have stood the test of work and good results for very many years in their home in Scotland. The Aberdeen-Angus cattle hold their own in favor amongst many breeders, although their neighbors, the Ayrshires, seem to have caught and still hold the popular taste for utility purposes in milk giving and butter making.

Many items of interest will be found in the poultry columns, and one writer upholds the claims of the old-time silver dorking as a good utility bird.

The orchard is just now beginning to return to the laborers their well-earned fruit. Now always appears to be the most anxious time. Thinning and summer pruning is yet not much understood in orchard work, but it is going to be a great factor in the making of fruit-producing machines as soon as it becomes well known and understood for practical purposes.

Another item of special interest to orange growers now that the hot weather is coming on apace is mulching. This operation is almost as necessary as watering, and our article lays a good deal of stress upon the advantage of keeping the ground from baking.

Next month we propose introducing a special article upon bulbous rooted perennials. Not much is known about these plants, but they have a great wealth of rich coloring and charming ornamentation.

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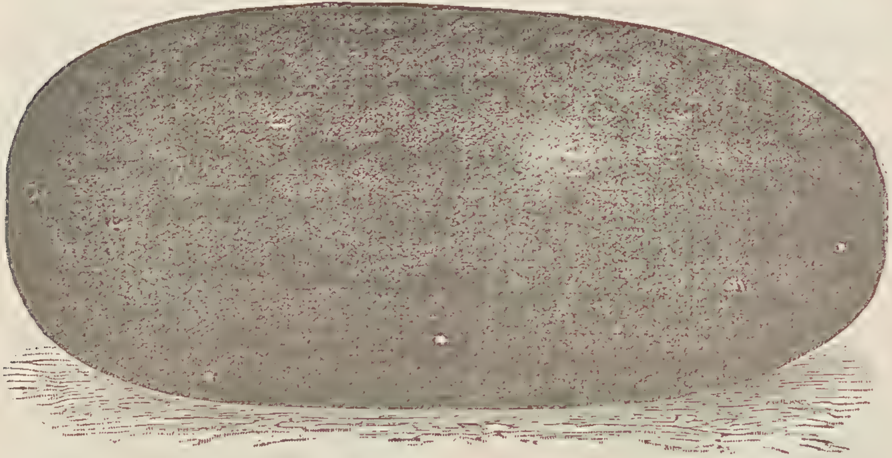
The Vegetable Garden.



WATER MELON—FLORIDA FAVORITE.

Operations for the Month.

IF the season continues dry it will necessitate frequent watering in the vegetable garden. Let the soil be soaked thoroughly, and thus encourage a deep root system in the vegetables; mere sprinkling is not sufficient. Weed the beds, hoe the surface well, and where it has not already been done. spread a mulch of manure or some suitable litter.

Bean, French or Kidney.—This should be at its best. Seed may be sown from time to time in any parts of the State where the rainfall has been satisfactory. This bean delights in warm, moist conditions. Gather the bean pods whilst they are young and not fully developed, and then it will be found that the flavour and quality is infinitely superior to the pods gathered when nearly matured. When sowing, make drills about 2 feet apart for dwarf or about 4 feet for tall-growing varieties, and sow the beans about 4 inches apart in the drills. Cover to about 3 inches with soil.

Beet, Red.—A little seed should be sown occasionally during the month, in order to keep up a supply for as long a time in the summer as practicable, for it is one of the most useful vegetables for summer use, and one that can generally be relied upon if it be treated fairly well. Instead of sowing in drills in the garden plants can be raised in a seed bed and when large enough to stand a shift can be planted out in the garden whenever space can be found for them. It is quite possible to grow good beets in almost any vacant space, if the space is even only sufficiently large for two or three plants; or a single plant may be put in here and there. Such planting, although a makeshift method, will under some circumstances prove effective; and this and other vegetables may sometimes be had where if planted under ordinary conditions they might fail.

Beet, Silver.—This is another very useful summer vegetable; and if only two or three plants can be grown during the dry weather they might provide a good occasional dish. Seed may be sown in seed-bed, if plants are required. Plant seedlings in rows about 20 inches or so apart

Broccoli.—In the coolest and elevated districts a few seeds may be sown occasionally in seed-bed, and well advanced seedlings may be planted as required from the bed in which they had been planted to develop. Water before moving the plants, and water thoroughly after planting.

Cabbage.—A good and well-known cabbage for the summer is the variety known as St. John's Day. Another one that may do well in moist districts during the summer is Succession. For the cabbage use a heavy dressing of rotted dung, and during growth stir up the surface soil with hand or wheel hoe. Prick out a few strong seedlings, and plant advanced pricked-out plants to meet requirements. The cabbage needs a good deal of moisture and unless this be supplied in dry weather the cabbage is unlikely to succeed.

Carrot.—A little seed should be sown from time to time during the month, in drills from 12 to 18 inches apart

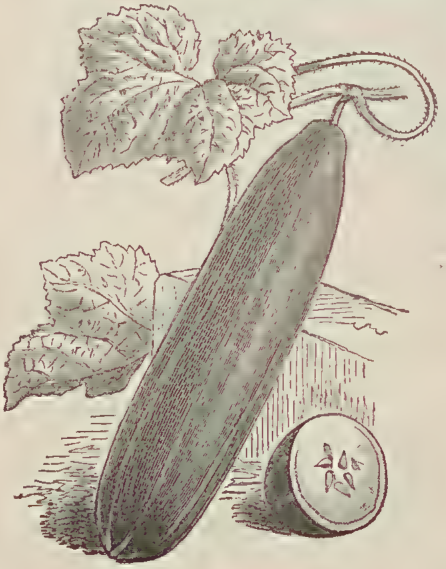
Cauliflower.—A little seed may be sown, but only in cool districts where the season is satisfactory. The seed-bed should be well looked after, and never allowed to become quite dry. Light shading is advisable, and it should be removed as soon as the plants have come into the second leaf.

Celery.—Earth up, or blanch by any other method that may be convenient, well grown or full grown celery plants. Plant out a few advanced seedlings, and apply abundance of water, if available, and some liquid manure occasionally. This is a semi-aquatic plant, and needs abundance of moisture.

ROSY GEM RADISH.

Cucumber, Melons, Marrows, Pumpkin, &c.—These plants are unlikely to make progress during the dry spell, but as soon as rain falls they grow rapidly and make up for lost time. In favored places seeds may be sown as extensively as may be required.

Mustard and Cress Even in dry places where but little water is available, these salad plants might be raised sufficiently well to provide an occasional dish, which will be very welcome when green vegetables are practically unprocurable. Sow a little seed from time to time. Use abundance of well-rotted manure, and take means to make the bed somewhat below the surface of the surrounding ground. As a rule, vegetable and flower beds are raised so high up that plants growing in them are far more liable to suffer from dry weather than low beds, and it is infinitely more difficult to apply water to the former than to the latter.



GRECIAN CUCUMBER.

DRUMHEAD OR MALTA LETTUCE.

Capsicum or Chili.—If seedlings have been raised, they should be planted out as soon as favorable conditions for planting occur.

Kohl Rabi.—Sow a little seed, transplant when the young plants are large enough, and treat as advised for cabbage.

KOHL RABI.

Leek.—Sow seed occasionally during the month in seed-bed, just sufficient to keep up a supply of seedlings for planting out. Plant out advanced seedlings in shallow trenches. Use abundance of manure, and water the leeks well during their growth. Plants that are nearly full grown should have their stems blanched some little time before use.

Lettuce.—This is a difficult plant to grow in dry, hot weather, for it needs abundance of moisture. Sow seeds where the plants are to grow, and do not sow in seed-bed or transplant, or the lettuces will most probably run to seed.

Onion.—Sow a little seed whenever the soil is in a good moist condition. Attend to onions now in growth; cultivate well between the plants, keeping down weeds.

Parsnip.—A little seed may be sown from time to time to keep up a supply of roots.

Peas.—In cool moist districts only, sow a few rows.

Potato.—Plant out a few rows in heavily manured land, Use, preferably, whole medium-sized potatoes for seed, free from scab and other defects.

Radish.—Sow a little seed from time to time.

Rhubarb.—This is a good time to sow seed if plants are required.

Tomato.—Plant out from seed-bed as many seedlings as may be required, and train the plants as they grow, providing supports at time of planting.

Turnip.—Sow a little seed.

Do not swamp the plants, but let the soil around them be permanently moist. Old plants can be kept in excellent condition if not allowed to see ,

The Flower Garden.

LILIUM EXIMUM.

WATER LILY

The Lily.

[By J. Cronin.]

Lilium—the lily, designated the queen of bulbous flowering plants, is a genus of herbaceous perennials, found native, in temperate parts chiefly, in Europe, Asia, and America, a number of the finest kinds being natives of Japan and California. There are about 50 distinct species in cultivation, in addition to which there are a number of varieties of the principal kinds. The lily is certainly one of the finest genera of plants cultivated, the principal factors that conduce to its high position in she esteem of horticulturists being the variation in height of the various species, the large and beautiful blooms of many and gorgeous shades of color, and the long period during which the many kinds produce their flowers.

A few kinds are grown in gardens in many parts of the State, the most generally noted being L. candidum (Madonna lily), L. longifolium (the Christmas lily), L. tigrinum (the Tiger lily), and L. speciosum (commonly known as the Japanese lily). These kinds thrive under extreme conditions of climate and soil, and many others are equally hardy. In the hills fine clumps of various species are grown, including the splendid L. auratum (the golden-banded lily of Japan), and produce qaantities of beautiful flowers in season. In the cool districts many kinds of lilies would succeed, but would be difficult in the hotter parts of the State unless grown under special shade conditions.

Soil and Situation.

The most suitable soil for the majority of lilies is a light and open loam that is thoroughly drained. A few kinds require a sandy peaty soil to bring them to perfection, but as a whole they thrive fairly in a sweet, unmanured, light garden soil. The most common cause of failure is undoubtedly the addition of fermenting animal manures to the soil they are grown in. Poor soils benefit by the addition of leaf-mould, or some very old cow manure in moderate quantity, but even in such soils if unmanured a fair measure of success is certain; while, if heavily manured with gross manure, the bulbs are nearly sure to fail.

A situation where the ground is shaded partially from hot sunshine is an important consideration. The majority of the lily family are found growing in forest regions, and in garden practice it is found that they thrive best when lightly shaded from hot sunshine by being planted among dwarf shrubs or plants, or protected by a trellis. The earliest blooming kinds flower in spring, others succeeding them during summer and early autumn, and root action again begins after the flower stems die. In mixed groups and borders where the soil is maintained in a cool condition during summer many kinds will succeed if undisturbed by digging and other gardening operations, and the soil is sweet, fairly porous, and unmanured. An occasional top-dressing of well rotted leaf mould is beneficial.

Propagation and Planting.

Lilies are propagated from offsets from the parent bulb—small bulbils that are produced in the axis of the leaves in some kinds, and occasionally, from scales

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of the bulbs. After the flowering is over and the stems die to the ground is the proper time to plant lilies and to effect an increase. The bulbs are practically dormant then. but soon begin to produce roots again for the following season, and an attempt to propagate after the roots are far advanced would result in damage to both bulb and offset. When the leaves of the flower have been matured, the small bulbils occurring there on L. tigrinum and other kinds are ready for removal. They should be planted in beds of light soil, where they may be allowed to remain until large enough to produce flowers. Propagation from the outer scales of the bulbs is resorted to by nurserymen to increase certain kinds The scales can be removed without damage to the bulbs and are sown in the manner of seeds when small bulbs are formed which are grown on as in the case of bulbils.

Autumn is the general season for planting most lilies. Trade growers lift the bulbs at the right season, replant the offsets at once, end store the bulbs in a cool dry place, often in dry sand, to retard root action. Where an increase of plants or patches is desired the plants should be lifted after blooming and death of the stem, and replanted at once, but unless an increase is wanted there is nothing to be gained by disturbing the bulbs. Lily bulbs should be planted at a depth of six or eight inches. according to size of bulbs, species, and soil conditions. Large bulbs of the taller-growing kinds may be planted at a depth of one foot with safety in hot but well drained soils. Fair room should be allowed for each bulb when grown in patches, about eight inches being sufficient for most kinds. In florists' gardens some lilies are grown for the cut flower trade, the practice being to grow them in rows in cool soil and not to disturb them for years unless for sale of bulbs.

Several species of lilies may be procured from the local nurserymen or seedsmen, and will be found to be generally locally grown and acclimatised bulbs. Improving and acclimatising lilies and other bulbous plants is not an amateur's work, and it is better to buy local bulbs. A fairly representative collection should include Liliums candidum, Brownii, croceum, Thunbergianum, longiflorum, tigrinum and its varieties, splendens, and tigrinum fl. pl., auratum, pardalidum, speciosum. and varieties.

Plant Notes.

ACHIMENES—When plants of achimenes are done flowering they may be placed on a shelf in a greenhouse until they show signs of going to rest by turning brown. Water should not be withheld until they get into the state referred to, otherwise the bulbs will be seriously injured for another year. When the tops have died down the tubers should be taken out of the pots and stored in sand in a place where the temperature will not fall much below 50 degrees during winter; they are easily destroyed by dampness when stored away for the winter.

NEW GERANIUM DAGATA—Among the newer geraniums there are some of very special merit, especially in the Bruant race, and in Dagata we have an ideal variety the premier of the 1905 novelties and the grandest of all of M. Bruant's many magnificent introductions, which are acknowledged to be the standard of geraniums all the world over and represent the highest development of this plant at the present time. The plants are dwarf, robust but compact growers; the foliage is extremely large, the leaves sometimes measuring 10-ins. in diameter, dark green with slight zone. The individual flowers are semi-double and magnificent in size and substance; the tresses are gigantic being as large as hydrangeas, and are produced in marvellous profusion on long stiff stems. The color is a remarkable shade of rose mauve with a large blotch of white at the base of the upper petals, having the appearance of a white throat. The plant has all the good points of the Bruant race, such as perfect habit, growth, resistence to all temperatures, uninterrupted bloom, and ease of cultivation, making it the finest pink geranium that we have for all purposes. We predict that it is the coming pink geranium. It has been favorably commented on in the 'Revue Horticole,' the leading French horticultural journal, and won the highest honors at the International Floral Exposition in Liege.

Veronica longifolius subsessilis is very beautiful, with its rich blue flowers; this is one of the best plants of the border.

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Hyacinths, narcissi, and tulips are better planted as soon as received; no matter whether a great number will be required for early flowering or not, it will be comparatively easy to control these when covered and making roots, while it is an impossibility to get them to flower satisfactorily if they are planted so late that their forcing is attempted before they have made sufficient roots. When these bulbs are to be planted in boxes the bulbs may be placed about three-quarters of an inch apart, and if the soil is put into such condition that the bulbs when pressed down will be well covered they will be all right in that respect. Fairly good soil, clear of green manure, will suit these bulbs, but if the soil available is stiff and heavy a sprinkling of sand will be beneficial. The soil in the boxes should be 3½ or 4 inches deep. A good watering will be necessary when the work of planting for the time being is completed.

Small ferns are always in good demand and although the prices at which they are sold leave but a small margin of profit, usually they are such a sure crop when any reasonable care is taken of them that they are on the whole worth looking well after. Small ferns in 2-inch pots should be encouraged in every possible way to make stocky well-formed plants before they are shifted into 3-inch pots. It will not pay to give these plants much more room on benches than the pots require, but it will pay to go over them once in a while and move them about a little; this will help them to attain perfect form. With small ferns it is very important that they be produced in successive batches so that there may be at all times a sufficient number in condition to fill orders as they come in.

Evergreens when near or under trees have a hard time getting food, the large trees taking from them what they should have. For this reason spreading surface manure about them, as far around as the branches extend, is a signal help to them.

Many fail in transplanting the trailing arbutus, Epigæa repens, because of neglecting to prune it. It is an evergreen, and one that makes few roots. If the tops were cut back one-half, or if a good ball of soil were taken with the roots, the arbutus is not difficult to transplant.

Hardy Shrubs: How to Plant and Treat Them.

By Samuel C. Moon, in "The Florists' Exchange."

I acknowledge without much preamble the distinguished compliment of being invited to address this intelligent audience on a subject with which you are already familiar.

I will assume that we all understand by the term "hardy shrubs" the class of perennial, bushy plants, deciduous and evergreen, though largely deciduous, which are used for ornamenting lawns and gardens. Though most are of moderate size when planted, some of them eventually attain the proportions of small trees. The term "hardy" will vary with the location of the planting, but will not materially affect the suggestions here presented. How to plant them will be considered in a twofold light; first, the distribution and arrangement of the plants on the lawn, second, the method of setting the roots in the ground.

Planting in Masses Most Effective.

As a general rule the most effective way to plant shrubbery is in masses, with not too much variety in one group. Professor Bailey says; 'The shubbery masses should be placed on the boundaries, for it is a fundamental concept of landscape gardening that the centre of a place should be open. In most places the mass or border planting should be the rule, and the isolated specimens the exception, but, unfortunately the rule is usually reversed." It is easy to see conspicuous evidences of the truth of these statements in almost any suburban neighborhood in examples of both good and poor arrangements.

Many planters seem to think it desirable to have a well developed plant of as many varieties as can find accommodation on the lawn in order that they may enjoy each plant individually as it passes through its varying changes of foliage, flowering, fruitage and leaflessness throughout the year. Such an arrangement may be appropriate for an arboretum or trial ground, and there are special charms in such a collection of shrubs as each successively comes into bloom. But as the blooming period of most shrubs is only from two to four weeks, the beauty of foliage hues both in the greenness of summer and autumn colorings, is an important consideration in arrangment of shrubbery groups. The introduction of bright colored foliage, such as golden elder or philadelphus, variegated weigelia, purple-leaved plum and barberry, etc., is occasionlly done very effectively, but more frequently the result is a conspicuous blotch amid the verdure. The handling of bright colors always requires a high degree of artistic skill, or the result will be displeasing to the most refined tastes, affording valuable object lessons to the student and gardener, but it is not the way to produce the most effective results in lawn adornment.

To quote again from Professor Bailey's essay on shrubbery: "Plants scattered over a lawn destroy all appearance of unity and purpose in the place. Every part of the place is equally accented. The area has no meaning or individuality. The plants are in the way. They spoil the lawn. The place is random."

In large grounds tre shubbery border shoutd be composed of successive masses of several plants of one species together, followed by another harmonious group of another sort, the border of the two groups interlacing with each other. Let the transition from one variety to another be gradual—not too sudden—and the groups not too large or too excluseve. An odd plant, taller or different from the others, may occasionlly stand out or above its companions very effectivly; of course, tall growers at the back flanked with smaller and low branching species in the foreground.

It is not advisable to mix evergreen and diciduous shrubs in the same group. A few shrubs seem to be admirably adapted for filling in plants. Tamarix is one of these which may often be used to relieve formality or to add variety in foliage effect, it being a tall, neat, inoffensive plant which will harmonize with almost any other one. For low-drooping shrubs to be used for carrying foliage from the grass lawn up to taller plants, few are more effective than Spiræa Thunbergi, Stephanandra, Rhodotypus and Berberis Thunbergi.

Knowledge of Plant Habits Essential.

The outlines of shrubberies should not be too straight or formal, but irregular and natural. A skilled florist or gardener should almost conceive these ideas with-

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out instructions, but definite knowledge of the habits of the different shrubs to be employed is essential to enable one to make a planting which will develop consistently as they increase in age and size. That such information can only be obtained successfully by observation and experience is evidenced by the very large number of inharmonious combinations that are seen in shrubberies all about the country. Probably rhododendrons are treated injudiciously and are a source of disappointment and waste of money more than any other shrub, largely through misunderstanding. Rhododendrons are sociable individuals, liking the companionship and protection of other plants. Their fine, fibrous roots delight in cool moist soil, but do not want to go very deep in earth to find these conditions, and are particularly sensitive to excessive heat or drought in midsummer. A situation where the shadows of large trees or buildings winter, and from severe winds, is an ideal will shield midday sun in summer and position. A perpetual mulch of leaves renewed each autumn, and with a light coat of stable manure on top of the leaves to keep them from blowing away, is most congenial to them. Mulching and shelter from wind are the most essential conditions.

One of my most satisfactory plantings of the rhododendrons was a small bed at the south corner of a residence. They were wanted in this position, but the owner had been told that they would not succeed in a southern exposure. Recognizing the fact that a large pear tree, south-east of this bed, would afford midday shade, and groups of large forest trees and neighboring buildings not far away would afford shelter from wind, the location was considered eligible. The natural soil was quite sandy, but by generous excavation two feet deep, and filling with vegetable mould taken from ditches on a nearby farm, and a few barrels of Jersey peat, a soil was prepared which proved suitable. The rhododendrons were planted four or five feet apart, and all vacant spaces filled in with Mahonia aquifolia and M. japonica and the heath Arbor vitæ until the bed was a solid mass of foliage, effectually shading the stems of the plants and the ground around them. The ground was then covered with a mulch of leaves a foot deep, with instructions to keep it there all the time, renewing it every Autumn, and that as the rhododendrons grew and spread, the nurse plants should be cut back or removed. This planting was made nine years ago, and has been successful.

TREATMENT OF SMALL YARDS.

A most difficult problem in shrub arrangement, more frequently met with in the practical experience of florists and jobbing gardeners than in the laying out of large lawns where general rules of landscape gardening might be applied, is the requirement of owners of small yards, who want one dozen of their old favorites set in a bed or along a garden fence. Perhaps it will be a lilac, forsythia, snowball, cydonia, weigelia, spiræa, dogwood, hydrangea, purple filbert, or other such incongruous neighbors. He who can arrange such a group as this tastily and so as it will continue attractive throughout the year, is a master in the art of shrub arrangement. Hopeless as this task may seem there are plants which we may always look to for help in such emergencies. The slender sprays of feathery foliage of the tamarix, the graceful drooping branches of Spiræa Thunbergi, Stephanandra flexuosa, the single flowered kerrias including the white form known as Rhodotypus kerroides, with its crinkled foliage, are all gentle inoffensive subjects willing to help fill up a gap and hide from public gaze the awkwardness of their fellows wherever such services is needed. By adding a few plants of this slender species, the stiffness of a group may be much relieved and some of its awkwardness softened.

A VALUABLE LESSON.

One of my most valuable lessons about planting was learned in walking through a lawn with an old gardener who remarked "The man who planted this place understood his business. See every tree is set on a little hill or mound." The next time you have the opportunity, compare the difference in appearance of a lawn where trees and shrubs stand in mounds slightly raised above the level of the surrounding lawn and other plantings where the lawn level is carried up to the roots of the plants, or as is sometimes seen, where plants stand in a depression. See which you like best, and then judge of the wisdom of the above suggeston.

A bed or border of shubbery should be heavily manured and dug or ploughed deeply and prepared as carefully as for corn or potatoes, or any other crop which is wanted to grow well. If I tell you to not ram the roots into a little hole in the ground, but to set them on a little mound you will think I am joking, but that is pretty nearly what I mean.

BIG HOLES NECESSARY,

It would seem as though every gardener should be tired of hearing the trite advice to dig big holes for shruds and trees, but the innumerable evidences of violations of the rule show that many planters have not yet learned this lesson. Some shrubs as forsythias, spiræas deutzias, etc, may flourish if stuck in the ground any way but many others need the best of care to insure success, and carlessness in setting discredits good material and a job which in other respects may be all right. Dig holes larger and deeper than the roots require, and larger in diameter at bottom than at top, then fill in some of the best soil obtainable, making a little cone or mound in the centre of the hole. Then spread out the roots of the plants around this mound of earth so that all the roots tend downward rather than horizontally or upward. Fill in the richest soil first tramping firmly as the filling proceeds. Remember Peter Henderson's chapter on tde "use of the foot in planting." Also bear in mind that it is results that count and five minutes spent in care of planting may mean one or two years saved in attaining the desired end.

MANURING, MULCHING, PRUNING.

Under the heading "How to Treat Shrubs" I will allude to manuring, mulch-

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ing and pruning. After planting apply a good mulch of manure to conserve moisture, furnish nourishment and to suppress weeds. An annual mulching of leaves with coarse manure to prevent their blowing away is beneficial to every class of plants, and mulched or fallowed ground is better than grass around the stems.

Most deciduous shrubs should be pruned severely when planted. Rhododendrons, azaleas, andromedas, etc. are usually transplanted with balls of earth and do not need much pruning, but where it is needful it won't hurt them. The annual pruning is a most important part of the care of shrubbery, and the point most difficult to give instruction on by written directions. It is an art which must be learned by practice and observation. The general rule to trim early bloomers as soon as they are through flowering, and midsummer or late bloomers in winter, contains a suggestion, but the indiscriminate cutting back of every shrub every year is a great mistake. When a shrub seems weak and needs strengthening, cut out declining shoots and apply manure around it. When one is vigorous and rampant, remove or horten superfluous shoots to reduce to symmetry with as little mutilation as possible. When one has become overgrown and dilapidated in appearence, cut back a part, or perhaps all of its unsightly stems severely—probably at the ground—and allow new shoots to restore the beauty and vigor of youth.

The only way to learn the art of trimming shrubbery is by observation and practice and the exercise of gumption. A safe general rule is that whenever you see a twig or branch which needs removing, cut it off on sight, regardless of time of year or other conditions; and when you don't see anything that needs removal don't prune it, regardless of rule or custom; and for a negative rule never shear a shrub with a hedge shears. The shearing of lawn shrubs into bald pates, suggestive of convicts or sheared sheep, displays ignorance of plants and depravity of taste. To the last general rule I make exception for topiary gardening, but the creation and care of topiary gardens and of formal specimens is a special art for which all of the above suggestions would have to be modified.

If my feeble sentences may be suggestive of useful afterthoughts in your minds and in mine, they will have accomplished all that I can hope for them.

Locksmith, &c

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ROSES

The Forcing of Roses.

(Continued from last issue).

While the different varieties will not always thrive with the same kind of soil, it is generally admitted that, at all events a soil for roses should contain decomposed pasture sods and cow manure. The sod should be obtained during the previous summer from some old pasture with a thick, fibrous sod, if possible, and should be piled up with alternate layers of cow manure, using one part of the manure to from four to six of the sods, according to the character of each. The sods should be cut just thick enough to remove the thick, fibrous portion, and if from an average loam soil, neither very heavy nor light, but with a good admixture of clay, the compost prepared as above will be of a suitable character for the rose benches, but if the sods come from a sanny loam soil the addition of one part of clay to five or six of the mixture will be desirable. On the other hand, if the soil is inclined to be heavy, an equal quantity of sand should certainly be added. While considerable clay is desirable in soil for roses, there is danger of its being too heavy, as even in shallow benches, if the soil at any time becomes too wet or during a cloudy period in winter, it will not only be longer in drying out than a lighter soil, but 'black spot' and other diseases will be much more likely to follow.

Early in the spring the compost pile should be worked over and the coarser sods broken up. After lying in the pile for two or three weeks more it will be ready to place on the benches. When the houses are long, it will be convenient to have openings in the side walls, through which the soil can be thrown upon the benches, and if there are side ventilators this can be readily done. If it is not feasible to have openings in the sides ot the houses, it will be a great convenience if a small car can be run along the edges of the benches.

For many years solid beds were almost universally used for growing roses and similar plants. They admit of supplying a full amount of plant food, but while they lessen the danger of injury from neglect in watering, they frequently do great harm if the plants are over-watered, particularly if the sun does not show itself for a number of days, as they are a long time in drying out. For this reason they fell into disrepute, and were replaced in most establishments by shallow raised benches, as it was found that roses grown upon them in four or five inches of soil were less likely to receive a check during the dull days of early winter. Upon solid beds, however, with good drainage large crops are secured as the bright sunny days of spring come on, and what is of much importance the plants can be grown for two or more years before they are thrown out, while upon shallow benches it is generally advisable to renew the plants each year.

A method has now come into use that provides for the thorough drainage and the aeration of the soil, as well as warming it up and drying it out. The solid beds are generally about 7 ft. wide with two beds and two walks in a house 20 ft. in width. The drainage is provided, in some cases, by means of common drain tile laid across the beds at intervals of from 1 to 3 ft., while in others a foot or more in depth of stone or broken brick is placed in the bottom and covered with 8 inches of soil. A few most successful growers secure bottom heat by running one or more steampipes lengthwise of the beds at about the centre of the layer of stones; the heat distributes itself through the bed and is of marked advantage in wet, dull weather, in drying out the surplus water and warming up the soil. Another favorite arrangement is to have three beds each 5 ft. wide, and four walks in a house 22 ft. wide. These beds have all of the advantages of the old solid bed, with none of the disadvantages, and are equally well adapted to carnations, violets, lettuce and other crops. The watering of the plants by what is known as subirrigation has many advantages.

Before the beds are filled with soil, ample drainage facilities should be provided, and if raised wooden benches are used there should be cracks of nearly one inch between the bottom boards, which should preferably not be more than six inches wide. When tile bottoms are used the cracks can be somewhat smaller. To prevent the soil from falling through the cracks, or falling through the cracks, or from filling up the openings between the stones in the solid beds, it is well to first put down a layer of sods with the grass side down, and upon these four ot five inches of the prepared soil for a raised bench or seven or eight for a solid bed should be placed. This should be leveled off and firmly packed down.

The beds are now ready for planting, and this should not long be delayed, as the thin layer of soil will soon dry out and will be in an undesirable condition for setting out the plants. The rows are generally 12 inches apart lengthwise of the house, so that a bed will held as many rows as it is feet wide, and the plants are set 12 to 16 inches apart in the rows, according to the strength of the variety and whether designed for one or two years' growing. Assort the plants and use the smaller ones next the walk. Dig holes for the plants with a trowel, and set the plants about as deep as they grew in the pots, taking care not to break the 'balls,' unless the plants have become pot-bound, when it is well to loosen the roots. While it is always desirable to work the soil carefully into place and to press it firmly about the roots, the soil between the plants should be smoothed off and the surface left light. Upon sloping benches in particular it is an excellent plan to have depressions about the plants to hold water and cause it to sink down to the roots for the first few waterings until the plants become established. If weeds start, as they probably will in a week or ten days, the soil should be stirred as soon as they appear, and this should be repeated whenever necessary to

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keep the beds clean until the roots fil the soil when it should be discontinued as it is likely to check the growth of the plants by breaking the growth.

From planting time, every detail of watering and ventilating should be carefully performed, as any check now would seriously injure the prospect of a paying crop of flowers. As soon as planted, and every bright morning hereafter until established the plants and also the walks should be thoroughly syringed, and the beds should be watered whenever they show signs of drying out, but while they should not suffer from lack of water even greater pains should be observed that they are not saturated. This will also aid in keeping down the red spider, which only flourishes in a dty atmosphere. No plant requires more care than the rose about ventilation. Draughts of cold air upon the foliage should always be avoided, and it is generally a good thing in a rose house to have the ventilators arranged with this idea. If there is but a single row, they should be on the side from which the prevailing winds come if hinged at the bottom, and on the opposite side if hinged at the top.

While either extreme of temperature should be guarded against, it is quite as desirable to give the plants fresh air at least for a short time each day. In hot weather give all of the air possible, and leave on some even at night at the ridge. Exposing the plants to great extremes of temperature is especially likely to bring on an attack of the mildew, and if it should appear (as it often does) without apparent cause the house should be kept somewhat closer than usual for a few days, and after syringing them the plants should be dusted over with sulphur. As the weafher becomes cool, it is well to furnish a little artificial heat to keep the temperative of the house above 55 deg. One or two steam pipes or a low fire in the hot water boiler will secure this and often prevent a serious check of the plants. With this care, firm short-jointed wood should be secured which will give an abundance of bloom. While 58 deg. is given as desirable for a rose house in order to secure the best results, with the various sorts some little deviation is advisable. The Meteor among other kinds needs a few degrees higher than that, while some of the older varieties should have a temperature a little lower than 58 degrees, if the plants have been properly grown.

It will generally be found best to do the watering early in the morning, and on the warm bright days when syringing is necessary it should be done early enough so that the plants will dry off before night. In ventilating care should be taken to avoid extremes, and it is best to give a little air as soon as the sun begins to warm the houses. and the amount should be gradually increased so that during the warmest and brightest part of the day it will be 10 to 15 deg. higher than at night. When the temperature is allowed to run up 10 or 15 deg. before the air is let on, and then the ventilators are opened wide, it will be most sure to bring on mildew. Plants grown with a judiciously regulated supply of air will be in a much healthier condition than those grown where extremes prevail.

The Orchard.

Oranges—Mulching

This is an operation that is not given the attention that it deserves, for though no doubt the mulch forms a harbor for various noxious insects, there is probably no better treatment for keeping she trees healthy and vigorous. Mulching tends to keep down weeds, to keep the roots cool, and to retain moisture in the soil for the tree's use, as the absorbent properties of the soil for water are increased by the addition of organic matter. On poor white sandy soils mulching is of especial value, as the heat is radiated from such soils to such an extent as to often scald the trunk and main branches of the tree; mulching prevents this radiation. Very heavy soils are also greatly benefited by mulching, because in dry weather they are very apt to cake and become exceedingly hard: this is prevented by mulching.

Mulching is good for citrus trees of all kinds, in fact there is no betier treatment for this class of fruit trees. The operation may be done by means of bush rakings, consisting of more or less decomposed leaves and branches, fine top soil, compost of any kind, stable manure, rotten straw, rotten weeds or corn-stalks. If there is a difficulty in obtaining suitable material for mulching, then it will pay to grow a crop of peas, cow-peas, or other strong-growing leguminous plants, which should be cut when coming into pod, and placed round tae trees. Leguminous plants, besides acting as a mulch, are a valuable manure on account of the amount of nitrogen they contain.

Thinning Apples.

No tree should be allowed to bear more fruit than it can mature; hence the necessity for thinning over-laden trees if you want to get good fruit

Where the trees are heavily overladen, the fruit should be judiciously thinned, so that the fruit that remains may have a chance to attain a fair size and develop properly, as it will then be more saleable than the undersized fruit from an overladen tree, and the tree itself will not be injured by the weight of the fruit breaking limbs, or, as sometimes happens, by splitting the main trunk, thereby seriously injuring, if not actually destroying, the tree.

In the case of many of the earlier varieties, especially cooking ones, the fruit may be allowed to develop to a sufficient size to be saleable, and then thinned, the balance of the fruit being allowed to come to maturity. In all other cases where the trees are heavily laden and unable to properly develop all their fruit, they should be thinned as soon as the crop has properly set, and there is no further chance of any fall taking place. The amount to be thinned will depend on the kind of fruit, the nature of the soil, age of the tree, and the brittleness or toughness of the wood, as different varieties of apples vary very much in this. With large cooking varieties the thinning should be severe so as to produce a large-sized fruit, yet not so severe as to produce oversized fruit. which are usually of little value, being soft and coarse. With dessert apples, where a medium-sized fruit—that is to say, a fruit not exceeding 3 inches in diameter—is required. it is not necessary to thin so severely, but as many fruit should be left on the tree as the tree is capable of growing to perfection, without breaking down or otherwise injuring it. There is another danger from over-cropping, and that is the danger of opening the head of the tree too much by the weight of the fruit spreading and bearing down the branches, thereby exposing the inner parts of the tree to the direct action of the sun, which, striking right on the unprotected bark, is often the cause of sunburn which is usually the immediate cause of several diseases, notably scald, or, as it is generally called. fire-blight.

Although it is not by any means likely that the day of the cactus type of dahlia is nearly passed, actual experience tells that these are in no way so predominantly prominent as they have been; other types are regaining lost ground with surprising rapidity. This is not more the case with decorative dahlias than with the show type, although in time the decorative type may outrank the latter, especially in the opinion of growers of flowers for commercial purposes. Taking these facts, as facts they certainly are, into consideration, growers should not ruthlessly destroy any good varieties of the one-time little thought of types of dahlias.

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The Dairy.

Best Results.

The following suggestions were made recently in the 'Republican' of St. Johnsbury, Vermont (U.S.A.), by Mr. Underwood, manager of the Farmers' Mutual Creamery Company. They desarve the attention of both creamery manager and patron. He very justly claims that farmers and dairymen should be careful of their milk, sending it to the creamery, whether as whole milk or cream, in the best possible condition. He asserts that creameries will eventually pay less for poor milk and cream, or reject them altogether, and advises milk producers to observe the following sensible methods:—

First: Milk or cream, fresh from the cow, should not be allowed to remain in a warm, close stable, or where there are odours of any kind.

Second: All utensils or parts that either milk or cream comes in contact with should be kept sweet and clean, and either sterilized, steamed or scalded after washing.

Third: Particularly, and all important, never mix warm milk or cream with cold. Milk or cream of equal temperature and sweetness, whether warm or cold, can be put together without detriment, if stirred or mixed well

Fourth: All milk and cream should be cooled, the sooner the better.

Fifth: Never shut up, cover, or tightly enclose milk or cream still warm from the cow.

Milk or cream treated as above, and with ordinary care, will stand lots of hard usage from transportation, hot weather, etc. Dairymen who follow these simple suggestions will find their dairies producing better butter than before. If they will get a dairy separator, either hand or power, they will find their dairies producing better butter. But they should especially observe the caution to be cleanly and neat, to wash thoroughly all parts of the separator, through which milk passes, each time it is used. If care is taken to select a simple separator this work will be very light—much easier than washing the pans and cans now in use in the old, or gravity process.

Skimmed Milk.

The stay-at-home value of fresh skimmed milk is recognised by leading dairymen, but its full and real value is not appreciated by all. It has two values, both very important: one is as food, the other as fertiliser. When properly used it is fed fresh and warm from the separator, by which its full value for both purposes is realised. The protein elements of skimmed milk are rich in nitrogen, an expensive thing to buy. These elements have a high-feeding value. The sugar in the milk is excellent for food, before it turns to lactic acid, but if allowed to become acid or sour it will produce positive harm and loss instead of gain. In no other way than by the use of the separator can this valuable ingredient be turned to profit. The protein loses only a small percentage of its value in passing through the animal system, and thus is available fer the second use as a fertiliser.

Skimmed milk, fresh from the centrifugal separator, is a thoroughly good human food, and may be sold as skimmed milk, cottage cheese or otherwise. It is sometimes sold as 'butter-milk' by the addition of a starter and by churning. For farm use there is no better way of using it than in raising calves and pigs. It is also good for milk cows. It costs something to raise a milk cow from calfhood to motherhood, but every year makes more apparent the real economy of having none but first-class cows, and there is an increasing disposition among dairy farmers to raise good calves. It is more sensible to raise a calf from known stock than to pay a small price for a hit or miss cow in a saleyard, however promising her appearance. Under no circumstances must the separator be forgotten. That best of food, new skimmed milk, still warm and perfectly sweet, cannot be had without it—not even from the creamery, for creamery skimmed milk is apt to be stale and diluted with washings and is always cold, or nearly so, by the time it can be fed. Skimmed milk has value also as poultry food.

It will be found highly profitable to balance the feeding ration. In this way only can fresh skimmed milk, or any other product, be fed economically. Nutritive ratio does not apply to milk cows only, but is equally important in the case of pigs and poultry. The ration should be balanced in order to prevent waste, and to get the full value of the food.

Watering, salting, and exercise are essential. Tempered water in extremely cold weather is favored by expert and successful dairymen.

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Aberdeen-Angus Cattle.

There is still a diversity of opinion regarding the origin of the Aberdeen-Angus cattle. By some, it has been seriously argued that they are an original and distinct species, while others maintain that they are a distinct departure from the original cattle of ancient Caledonia. Certain it is that they have had a separate existence for a long period of time, and if the latter theory of variation is correct, how and when these departures may have been effected must be left largely to conjecture.

The idea which finds most favor is the probability that the peculiarity, such as being hornless, may have appeared suddenly, owing to spontaneous variation, and that these results have come to possess a powerful hereditary tendency. These spontaneous variations or organic changes must have occurred since domestication took place, for while deviations from the original form of animals may arise spontaneously, some sort ef selection in breeding is necessary in order to impart to those isolated deviations such fixity of sharacter, or such strong hereditary power as would ensure their perpetuation. Among cattle completely wild, no artificial selection could take place, but with those under domestication the case is different, as isolating and breeding from no other but animals possessing a peculiarity would, in time, lead to perpetuation or hereditary fixity.

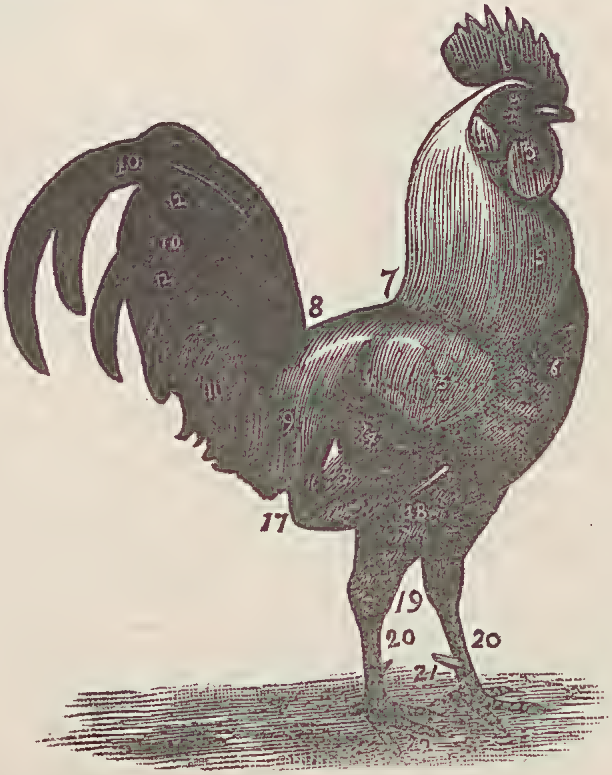
Polled varieties of cattle have been more widely spread than is generally supposed, but there is nothing to lead to the supposition that there is any near affinity between one another. Heredotus, writing of the Scythians, mentions that their chariots were drawn by oxen without horns, the cold preventing their having any; and Darwin states that a polled variety of cattle existed in Paraguay, South America, at the close of the 18th century. In Sutherlandshire, Scotland, there was a polled variety in 1769, and, according to Boswell, another in the Isle of Skye about 1773, while similar characteristics appeared among the cattle of Iceland at a less remote period. And, although the Scotch Galloway cattle of to-day may have a certain resemblance to the Aberdeen-Angus, there is certainly no nearer kinship between them than that the ancestors of each breed have sprung from one parent stock in the ancient cattle of Caledonia. Previous to the close of the 18th century, nearly all the Galloways were horned, and, indeed, there is a very close resemblance between them and the present Highlanders—minus the horns. But the same theory applies to all, and the case of the Galloways is the strongest proof of it. There has been a sudden appearance, through spontaneous variation, organic or accidental change (if there is an accidental change in Nature) of one or more animals without horns, and the preservation of the new feature has been perpetuated, since the cattle were domesticated by some kind of selection in remote ages, sufficient to stamp with permanency the exceptional characteristic of being dolled or dodded.

There can be little doubt that the breed is indigenous to the very districts which still form its headquarters, viz., Aberdeenshire and Forfarshire, although it is not now generally disputed that the latter tribe was but a branch of the former, altered to a considerable extent by different surroundings. But from earliest history, the cattle of Buchan, in Aberdeenshire, are referred to as a distinct breed, and this is what removes the question of date of origin furthest from mere assumption. The lower part of Aberdeenshire was known by the name of Buchan, at least two centuries before the days of Wallace and of Bruce. The derivation of the word is the Gaelic 'Bo,' meaning an ox, and 'caen,' the head; so that in the eleventh century, if not much earlier, there was something about the heads of the cattle of this part of the country distinctly different from those of other localities. Their history beyond this is lost in the mist of antiquity, and the nearest that mortal man can approach to accuracy is that the breed has existed in Aberdeenshire from time immemorial.

The earliest records of their utility are furnished by the Williamsons of St. John's Wells, Fyvie, who, about the year 1770, were the principal cattle dealers in Scotland. They stated that they preferred them to others, 'as they were most easily maintained, more hardy in work, have flesh of the finest grain, and pay better in proportion to the goodness of their keep.' So even at this date the breed had such well defined features as to mark it out for such excellent properties that the most extensive cattle dealer in Scotland regarded them as superior to all other varieties.

The breed first came into prominence in British history at the Highland and Agricultural Society's Show, in 1829, when Mr. Hugh Watson triumphed for the best fat stock of any breed. One of his exhibits was afterwards shown at Smithfield, where she won the medal in the class for extra stock. Her breast was not quite 8 inches from the ground. Mr. McCombie, of Tillyfour, was the next to enter the field with them, and in 1847 he gained the championship at the National Show. From that date until his death he maintained a foremost place. At the Paris Exhibition of 1856 he was awarded the gold medal for Charlotte, the dam of Pride of Aberdeen. In 1862 at Paris he secured similar honors for the best ox. But the greatest triumph of the breed was at the International Competition at Paris in 1878, where the Tillyfour group, by twenty-four votes out of thirty-one, won the grand championship of the show. —John Moir, in Agricultural Gazette of New South Wales.

The Poultry Yard.



For explanation of points see previous issues.

The Silver Dorking.

[By H. V. Hawkins.]

Silver Dorkings are pre-eminently English fowls, and take their name from the old-fashioned town of Dorking, in Surrey, which is the great centre of their production. Dorkings are fine, handsome birds of much avoirdupois, some of the male birds weighing 14 lbs. each, and in tenderness and succulence there is no fowl to equal them. In color they vary from white to silver-grey and dark, but in all cases the skin and legs are white, two very necessary points for the table. A peculiarity of the Dorkings is that they have five toes on each foot. It is a breed of which England is rightly proud, and it is held in high esteem as the farmers' all-round utility fowl. It is also recognised as the breed *par excellence* for crossing purposes, and in addition it is a splendid layer, very many reaching 175 eggs per annum.

Although not as popular as many other varieties in the Commonwealth, its usefulness may be seen by the many excellent new breeds which have been built up by the introduction of the Dorking. One of the principles to be observed is to hatch the young in July, August, and September, and not later. Five second season hens are sufficient for one male bird, and he should be a vigorous cockerel about ten months old and unrelated. Dorkings will not stand close breeding, and it is as well they do not, otherwise they would soon lose their size like the Silver Wyandottes recently exhibited, many of which were bred for feather only—even type appears to have been disregarded. Farmers have by far the largest specimens in many breeds, for the good reason that they do not usually exhibit, their one object being to obtain eggs or flesh.

The Silver Grey Dorking hen is a perfect model in form. She walks and stands erect, her head well up, and has a fine tapering neck from the full flowing cape over the shoulders. The comb is single and of fair size, evenly serrated and falling over on one side in front part for about half the length, whilst the back half is straight up without twists or side springs. Although few hens have as perfect a comb as the one described it is the ideal bird, not only for appearance, but to breed from. It is important to have a good comb on the female for the sake of its influence in breeding for males, as well as females. Many a breeder has been disappointed in the combs of his male birds, when the fault has been due to the combs of the hens—weak combs, falling over the entire length, twisted, or side springs. These faults are too often overlooked in the hens. Ear-lobes, wattles, and face should be bright red, with smooth even tenure.

The head is rather large but not coarse, and with the neck is silvery white. Feathering of neck full; and here Nature insists on one of her own prerogatives. The feathers of the neck have a dark stripe in the centre and no amount of selection changes it with the other colors of the body; but the narrower the stripe the lighter is the color of the neck. As the feathers approach the head the smaller the stripe, till the head feathers are all silvery white, and this is best without a tinge of brown towards the throat. The neck should be well arched, the full feathering sitting well over the shoulder. As in all Dorkings the eyes are red, or to be strictly correct, the color is a deep orange or light red.

Body should be deep, long and broad; breast salmon color, blending to grey on the sides. The term salmon color, or salmon red, is often misunderstood; salmon color is a reddish pink, softened on the Dorking breast with the least tinge of grey in it which gives it a subdued shade. The deep red of some hens is too dark for silver grey hens; that was the color of the old 'Grey Dorking' before the Silver Greys were bred. Too light or faint colors are also defective. A good rich, soft, salmon color, with as little light shafting and edging as possible, and entirely free from dark spots or tip feathers, is the handsomeet breast. A good evenly colored breast is a point of great desirability in a Silver Grey Dorking hen. This color is not found in any other breed of fowls except Game and then it is seldom as rich. For the sake of getting light backs and neaks, the bresst color is ofcen overlooked or underestimated in the Show pen. Many hens and pullets are awarded prizes on account of their backs, whiie their breasts are poor in color. The breast color rhould be more regarded, as it is a distinctive Dorking feature.

We now come to the color of the back of the Silver Grey hen, which gives the name to the breed. It is not a solid color, but when looking at it closely we see a very fine mottling of deep grey and light grey. On examining a feather we find it is made up of very fine etchings, short wavy lines and fine longish dots, neither round spots nor straight lines. Some term it pencilling, but pencilling is more applied to fine lines on the edges of feathers. This mottling is very beautiful and is seen in some species of wild birds, especially game birds, but in none purer than the Silver Dorking. The light and dark are about equal in quantity; when the dark predominates the color is defective. The shafts of the feathers are light, but the less conspicuous the better. Very few birds are seen without the light shafting; yet there is a possibility of breeding out the light shafts, so that the back would resemble a piece of broken steel at the fractuee. There is reason to believe that this result can be brought about, as we have seen in Partridge Cochins, which once had light shafts to a great degree. but still no other quality should be sacrificed for the absence of shaft color. I have seen small inferior birds awarded first prize over large ones with good backs, fine in all other respects.

Many birds have lightes or darker tips to the feathers, which mar the even steel color. A shade of brown or drab often appears, and in the latter part of summer most backs incline that way in the old faded feathers before moulting, but come out bright and clean in new feathers—under part of body and fluff are grey. There is a tendency on the shoulder and upper wing coverts to have a reddish tinge. This is a persistent feature of this breed and it should be avoided in the Show pen and bred out as much as possible at all times; it is gradually disappearing, but it is a decided bore to breeders of Show birds. The wings should be closely folded and carried well up. Coverts and bow, silver grey with white centre lines. Primaries and secondaries, upper webs brown, lower webs slaty, mottled with grey. The tail of fair size to match the body color, and carried in a fairly elevated position. The large feathers are grey on the outsides, dark brown on the insides. Thighs strong, also grey in color. Legs white, and the fifth toe must be perfect in form and development. It will be seen that a bird with such fine coloring, form and size, is not to be overlooked, for added to all this, it is a bird of fine carriage, graceful movement and symmetrical proportions.

2,000 Hens in One House.

Almost all poultry books and writers in the poultry papers say that not over 40 to 50 heas can be successfully kept in one house. This involves a large amount of work. The keeping of 400 hens in that way means the care of eight or ten separate houses and a great many steps.

The 'Rural New Yorker' has found a man who keeps 2,000 hens in one house, and has engaged him to describe his method. We copy his article below, but will add that in our climate a much cheaper house will answer just as well. We must take exception to his style of roosts. Being permanent, they are always in the way. A much better plan is to take your scantling, or, where they can be had, a peeled pole 3 or 4 inches in diameter and nail short legs to it, making a bench not over 12 to 18 inches high. This answers the purpose quite as well, and can be taken out doors to burn off vermin if desirable, or moved to one side when the house is to be cleaned.

Dr. B. Burr, of Maryland, U.S.A., thus describes the house:—

The "Burr 2,000-hen one-man house," the writer believes, is a solution of the problem of keeping poultry on a paying scale. The superstition that hens kept in flocks larger than 20 to 30 would not give as good results as the smaller flocks, giving 10 square feet of house room and 100 square feet of yard room as the smallest area compatible with good results, is absolutely false, being based on theory entirely, while the basic law is that results are governed by the cubic feet of clean, fresh air available for each bird. While hens require warmth only during four months of the year, and during the other eight months all the active air they can get, most poultry houses are constructed to keep them warm for twelve months. The further disadvantage of a divided house is that the conditions of light, heat, and air are not alike in any two pens. In regard to yards, 'unlimited' healthy range for 1,000 hens can be had in a yard 100 feet square, provided this yard is kept ploughed and sown to green feed as often as it becomes bare. As a matter of economy is green feed and labor, three or four yards are attached to each house—front, back, and at either end, in a single 1,000-hen house—and a continual crop of green food is produced, the growing of which keeps the yards from growing 'sick.' The same sanitary care of the dirt in the house accomplishes the same ends—viz., the dirt from the lower scratching floor is thrown to the upper roosting floor, and raked out gradually with the manure, thus keeping the lower floor always sweet and clean. The straw or other litter used for scratching is changed every few weeks and spread on the land for top-dressing.

The house is built long and narrow to give the most light and air and controllable ventilation. It is built in two storys to economise roof, cost, and labor, and ensure dry and airy sleeping quarters. The lower story front is partially enclosed with glass doors in winter to keep out rain, snow, and wind, and the house is faced a trifle to the east of south-east to give the greatest amount of sun in winter and the least in summer. Take any unused building, preferably one that can be placed in a lot and faced as above, and if your studding is long enough put in a floor, giving head room for the attendant upstairs and down. If not, raise the building high enough from the ground to make the distance from ground to plate 11 to 12 feet. Set on posts 3 feet in the ground (this is the only foundation that is rat and mouse proof), and raise the grade of ground 12 inches under house, sloping away from it.

Undertakers.

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Upstairs place a two-sash window reaching from 6 inches below the plate to the floor; every 16 feet is enough, and two on each end smaller and set higher up above roost level. Have a door in each end. Downstairs the whole front is wired in. with a wire door under each window. The ends and back are tight with a door under each window at the ends and every 8 feet on the back. Make the back doors opening alternately right and left, so that they can be partially opened in any wind when needed. Place ten nest boxes on legs 12 inches from floor on each side, and run roosts not over 5 feet long and 22 inches apart at right angles to the length of the building. If the building is wide enough (over 18 feet), this gives between each set of windows a set of seven roosts on each side with a central passage between them for cleaning and a possage on each side for egg-gathering.

The simplest roost is a piece of 2 x 2 inch, slightly rounded on the top, bored on the lower side halfway through, and set on a ⅜-inch iron rod driven into the floor. If your floor beams are 22 inches from centres, the best plan is to put them through that space, a very little below floor in line of irons and bore one inch into leader.

In front of each north window in line of roost is a trapdoor 3 feet long and the width of the space between floor beams. Running in from the north side of this opening to a support 2 feet from the lower dirt floor in the centre of building is the runway, giving the fowls free passage up and down. This is best made of siding lapped uphill to catch their feet, and being caught below by a notch or slide can be slid up at night. Figuring that a hen is entitled to 8 inches of roosting room, you can put in your building as many hens as your roosts will hold without fear of crowding.

The care of 2,000 hens thus housed does not take over four working hours a day, distributed as follows:—At sunrise open trapdoors, and in cold weather south windows if the day is bright If not, do not open windows any more than they have been open all night until the sun becomes warm. Mixed grain is thrown in litter and water troughs filled. We use 10-foot galvanised 4-inch gutter set in frame 12 inches from ground, with running board 6 inches from ground, and trough covered with slanting roof to keep hens out of water. The plumber will solder in ends and hole for cork. In very cold weather a pail of hot water is put in each trough to take off the chill before cold water is put in. During the morning the hoppers are kept filled if you use the dry feeding method; if not, mash is fed at 11 o'clock; then green food given them (cabbage, rutabagas, mangels, sugar beets in cold weather, lawn clippings for eight months in the year). At night eggs are gathered, and mixed grain thrown in litter, and after they have gone to bed the house is closed up, the windows closed in accordance with the weather, but never tight; the water troughs washed clean and left as simple and sure as the above. If you are not a born 'chicken crank,' avoid the business as you would the itch, for its attention to detail will drive you to drink, or, what is worse, lead you to shirk, fail, and condemn the poultry business as a financial failure, but if you enjoy the work, and get pleasure from the idiosyncrasies of your hens, then start a small unit, and grow with them until you have reached your 'hen-keeping' capacity.

A Monster Egg.

Says the Agricultural Journal of the Cape of Good Hope.—Mr G. J. H. Schurr, of Marchwood, Sunninghill Road, Wynberg, brought to this office during last month a monster fowl's egg. This egg, which was weighed and measured in this office, turned the scale at 177 7 grammes, or a fraction over 6¼ ozs. avoirdupois. The dimensions were about 3½ inches long, with a circumference that way of 9 inches, while the width was 2½ inches, with a circumference that way of 7½ inches at the widest part. The egg was laid by a White Leghorn hen of a good laying strain. She is about 20 months old, and is in her second season. The egg appeared to have two yolks, but on being accidentally broken it was found to contain only one. This is the largest hen's egg that has come to our personal knowledge Perhaps some of our readers may be able to give some information as to whether it is or not a record for size and weight.

Don't sacrifice the producers; they are the only source of continuous production.

Even with high food it will pay to fatten the market stock; indeed it will pay better now than under cheap feed conditions.

Where space is limited, large quantities of greenstuff can be grown indoors, in outhouses and sheds in boxes. The warmth and moisture makes for rapid growth.

PRINTING

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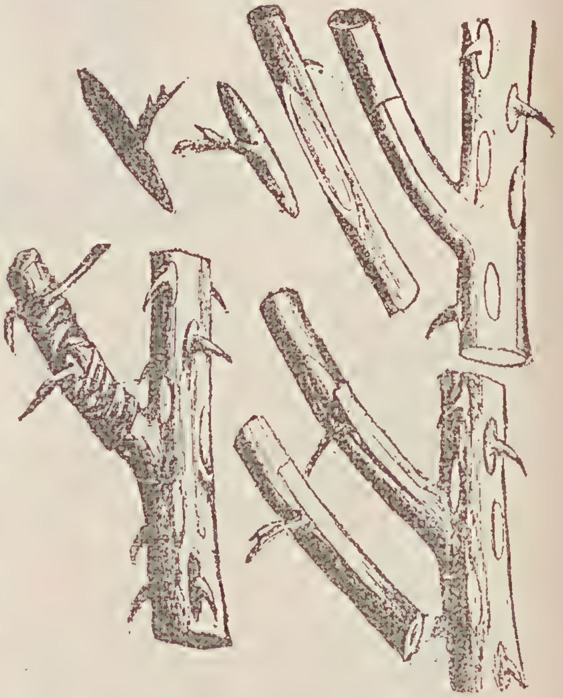
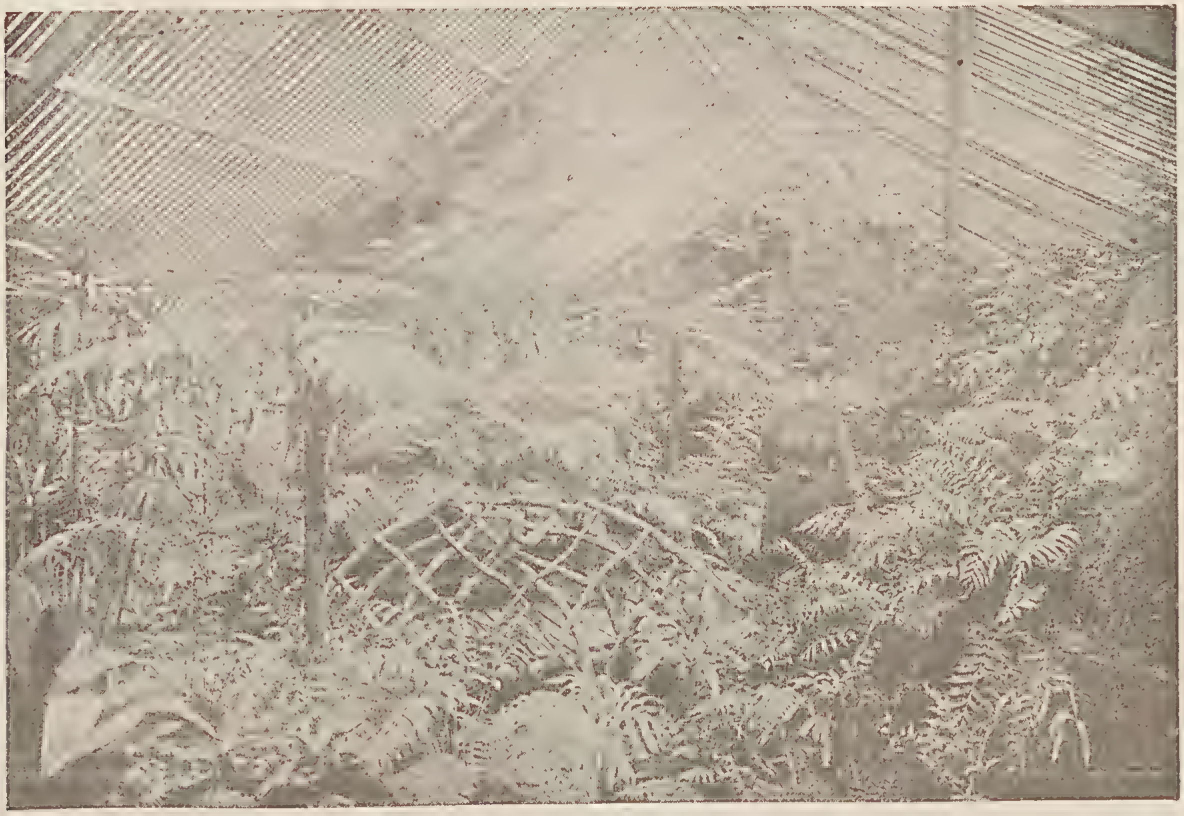
To Correspondents.

W. Stockton enquires whether it is possible to grow camphor trees profitably. —The camphor tree will grow in any ordinary climate where but no more than a few degrees of frost occur. It is said by good authorites that it cannot be profitably grown anywhere but in Japan. This has been proved incorrect, for in South California there are trees growing with trunks 2 ft. in diameter at the base. The camphor tree is not particular as to soil, growing equally well in light loam or heavy clay, and does not require as much water for its best development as the English walnut. At any rate it is now certain the trees can be grown profitably outside Japan.

H. Manning.—Below we give you an illustrtation which we think will be a good answer to your question as to the best method of budding roses.



There is no danger that the dairy business will soon be overdone. It will never be so conducted that prime articles will be supplied in excess of the market. Progress is the keynote. Modern dairying demands skill in stock breeding, care in feeding, attention to details in handling milk and milk products, and shrewdness in selling. The past decade shows advancement mainly in feeding the cows and caring for the milk, though progress has also been made in the art of breeding and in marketing the products of the dairy. Wiser feeding has reduced the cost of milk production. The dairy outlook is a good one.



A PRETTY FERNERY GROTTO

The Camellia, its Culture, &c.

The Camellia, named after Camellus, a Moravian Jesuit, first introduced from China as C. japonica and C. anemoniflora (the old red Waratah) about the year 1739, is closely related to the Tea plant; indeed, it is said the leaves of C. sasanqua (Lady Bank's Sasan) are used in China to mix with some of the select kinds of tea. As a result of inter-crossing our home florists have added many hundred improved varieties to those introduced originally. Camellias thrive perfectly in China, blooming freely between October and the following May, and are not so susceptible to frost as is generally supposed; indeed, the single-flowered varieties succeed trained against north aspect walls. Notwithstanding their comparative hardihood, the very best hybrid, double-flowered varieties do not bloom well, though laden with flower buds, in a too cold, damp greenhouse, excess of atmospheric moisture within which rots the buds of some. The lowest winter temperature in such places should be between 35 and 45 degrees. Enduring as these plants appear to be—apart from occasionally shedding their flower buds—one fact must not be lost sight of, *i.e.*, that they only thrive well in a light, open compost, comprising equal parts of peat and fibrous loam, with somewhat liberal additions of silver sand, rotten cow dung, and nodules of charcoal, over efficient drainage. If potted somewhat firmly, their compacatively large roots soon take possession, and with sufficient waterings, with manure water, occasionally at the growing season they retain good health and bloom freely for from three to four years without repotting, though an annual mulching with fresh rich soil over the roots is beneficial. The best time to repot them is either just as they begin growing, or immediately the tender young shoots attain to their full length, and growth is improved by giving them a little extra warmth, bottom heat in particular, with overhead syringings. It is all-important to turn them out of doors immediately the young growths attain to their full length. They are propagated by in-arching and grafting upon the single flowered, also by cuttings inserted firmly in sand in March or April, set in a shady close frame, and after a few weeks taken and plunged in bottom heat.

The most indispensable essential condition in lilies prior to subjecting them to forcing is that of sufficient root formation. It is well nigh useless to expect lilies to force satisfactorily if they are removed from outdoors into heat before they have made considerable progress in the task of filling the soil in the pots with roots.

South Australian Honey.

After a preliminary failure the Commercial Agent (Mr. A. E. M. Norton) has met with success in the distribution of South Australian honey in London (says the Journal of Agriculture). In a letter dated September 27 he reports:—The whole shipment of honey ex s.s. Orient is practically all distributed, and it is now only a question of waiting to see how the repeat orders come in. From a conversation I had with Mr. Sainsbury, and also with some of his managers, I do not think there is any doubt whatever about its being a success. Mr. Sainsbury has very considerably gone out of his way to introduce it, as is evidenced by the fact that he is giving his assistants ½d. a bottle upon all they sell. This, I think, will do more for us than any other mode of advertisement." This honey is distributed in glass jars, containing 1 lb each, at 6d. per jar, and it is expected that the price to the apiarists will be 2½d. per lb., f.o.b., Port Adelaide. This is slightly above the local market rate, and even if a higher price could be obtained in Adelaide it would be better in the long run for the apiarists to keep up the London supply and maintain the hold which they have already on the London market. The Commercial Agent has cabled for a monthly supply of at least 7 tons, and the bee-keepers have undertaken to supply this.

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Potato Experiments.

[From the U.S. Experiment Station Record].

During the past two years the station has carried on tests comparing various methods of potato culture, different sizes of seed pieces and quantities of seed, different kinds of seed, and distance experiments.

Seed potatoes produced under a straw mulch the preceding year yielded 47 per cent. more in 1905 and 41 per cent. more in 1906 than similar seed grown by cultivation. Seed potatoes stored in an ordinary cellar, where they wilted and sprouted badly before planting, gave poor results. The average yield from sound seed was 56 per cent. greater than from sprouted seed in three separate tests. Of different combinations tried, the best results were obtained from 18 bushels of seed per acre cut in quarter tubers and the pieces planted 18 in. apart. Nearly as good results were obtained from 36 bushels per acre of seed tubers cut in halves and planted 12 in. apart.

An old alfalfa sod ploughed up in the fall of 1905 and reploughed in the spring seemed to have increased the yield of potatoes only 5 per cent. Planting the seed pieces in furrows made with a lister after ploughing increased the yield 28 per cent. as cnmpared with dropping the seed pieces in every third furrow as the ploughing was done. Ridging up the ground over the rows of seed pieces when planted, and harrowing the ridges down as the weeds began to grow, increased the yield 53 per cent. over leevfng the ground level above the rows of planted seed.

Potatoes planted 4 in. deep gave better yields in 1905 than those planted 3 and 5 inches deep, but the tubers were about equal in quality. Planting the seed 1 and 2 in. deep decreased both yield and quality as compared with deeper plantings.

In 1905 7 cultivations gave 47 per cent. greater yield than 5 cultivations, but 10 cultivations reduced the yield slightfy below that from 7 cuitivations. In 1906, from weedy lands, 3 harrowings followed by 4 cultivations produced a yield 132 per cent. greater than 2 harrowings and 2 cultivations. The same year, on cleaner ground, 3 harrowings and 4 cultivations increased the yield over 2 harrowings and 3 cultivations by 60 per cent., while with 4 harrowings and 6 cultivations the yield was slightly decreased.

Seven years' experience indicates that mulching is a fairly satisfactory way of growing potatoes on a small scale, although the method is practicable only when the mulching material can be obtained cheaply. Old hay or straw should be spread about 4 in. deep just befero the plants appear and after the ground has been harrowed once or twice since planting. Rather large seed pieces should be planted 2 or 3 in. deep, ane the hills should be placed 18 by 18 or 12 by 24 in.

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◆

Euphorbia corollata is a pretty plant with its abundance of small white flowers.

One of the most showy plants is Listris pychnostachya, with its long spikes of purple flowers.

Sunflowers have some species which are very showy. One of them is mollis, then there is multiflorus, the fine double form of decapetalus, and one of the finest garden forms is known as Miss Mellish. It is a variety of rigidus.

Lespedeza Sieboldii is a fine plant. It is often classed as a shrub, but it is properly herbaceous. It is perhaps better known as Desmodium penduliflorum.

Lobelia cardinalis and its varieties are very fine with their bright colored flowers. Then there is Lobelia syphilitica, with its fine blue spikes, though common in some sections it certainly should find a place in the border.

The rudbeckias are very showy; the varieties sub tomentosa and triloba are good, medium tall sorts, but of course the most showy are the taller laciniata and its double form, better known as Golden Glow.

SOME PRESS COMMENTS ON A BURBANK ACHIEVEMENT.—"And he gave it for his opinion," wrote Swift, "that whoever could make two ears of corn, or two blades of grass to grow where only one grew before, would deserve better of mankind, and do more essential service to his country, than the whole race of politicians put together." If this be true as a general proposition, what must Luther Burbank deserve who grows seventy-three varieties of apples on a tree which Nature designed should bear but one? To call Mr. Burbank the greatest grafter in the United States is a compliment not an offence.—Brooklyn (N.Y.) Eagle. . . . Luther Burbank has grown seventy-three different kinds of apple on one tree. It's unfortunate that trees like that didn't grow in the Garden of Eden, for then Eve couldn't have made up her mind which one to eat. On second thoughts, however, it's just as well there wasn't. Eve might have eaten them all.—New York American.

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January Number of 1908

The Australian Gardener

(A Monthly Journal of Floriculture, Horticulture, Agriculture, and Poultry),

CONTAINS—

The Vegetable Garden—
  Operations for the Month
Flower Garden—
  The Amaryllis.
  Notes for the Month.
  Hardy Bulbs and Tuberous-rooted Plants.
  The Forcing of Roses (continued).
EDITORIAL.

The Orchard—
  Gathering.
  Thinning Apricots.
The Dairy—
  Teaching a Calf to Drink.
  Scours in Calves.
  Dairying Hints.
ANSWERS TO CORRESPONDENTS.

The Poultry Yard—
  Diseases of Fowls.
  Fattening Poultry.
The Farm—
  Conservation of Fodder.
  &c, &c., &c.

Correspondents.

All Business Communications must be addressed to

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Corner of Pirie and Wyatt Streets,
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Contributors.

All letters, manuscripts, and matter intended for publication should be addressed to the Adelaide Office, corner of Pirie and Wyatt Streets, Adelaide, and in order to appear in the following issue should be posted to reach Adelaide by the 20th of the current month. It is necessary that correspondents should furnish their names and addresses.

Advertisers

Particulars of rates will be supplied on application.

Subscribers.

The subscription rate is 3/6 per annum, posted to any address in Australasia.

Subscribers are asked to notify the Adelaide Office if they do not receive their copy of the paper; also any alteration of address.

EDITORIAL

THE opening of another year brings with it potentialities of things that may be considered good bad or indifferent. Every man will look at these things from his own point of view first always. That is human nature, and it cannot be altered. But there are men who are "the salt of the earth," whose line of vision goes beyond themselves and they wonder how others are or may be affected by their use of things, meaning opportunities. Now the mission of the "Australian Gardener," while not pretending to philanthropic means of living, gives information and advice which rigidly followed is always for good. Nothing indifferent or bad can come of it. It enjoys the happy distinction of working always for the best in human and all other kinds of nature. Not a single line in the publication can be construed otherwise. Differences of opinion there always will be, but that is unavoidable and is in itself a real good, because such differences make for the solution of difficulties in production from nature. Here is a list of some of the contents in our New Year issue, and our readers will freely admit that the information given is all as good as can be :—

VEGETABLE GARDEN—Operations for the month.
FLOWER GARDEN—The Amaryllis. Notes for the Month. Hardy Bulbs and Tuberous-rooted Plants. The Forcing of Roses.
ORCHARD—Gathering. Thinning apricots.
THE DAIRY—Teaching a Calf to Drink. Scours in Calves. Dairying Hints.
POULTRY YARD—Diseases of Fowls. Fattening Poultry.
THE FARM—Conservation of Fodder.

Having carefully read over these we commend our readers to follow the instructions therein, and to spread the news amongst their friends and so help them and us in our work. In this way both our readers and ourselves will enjoy what we sincerely wish—

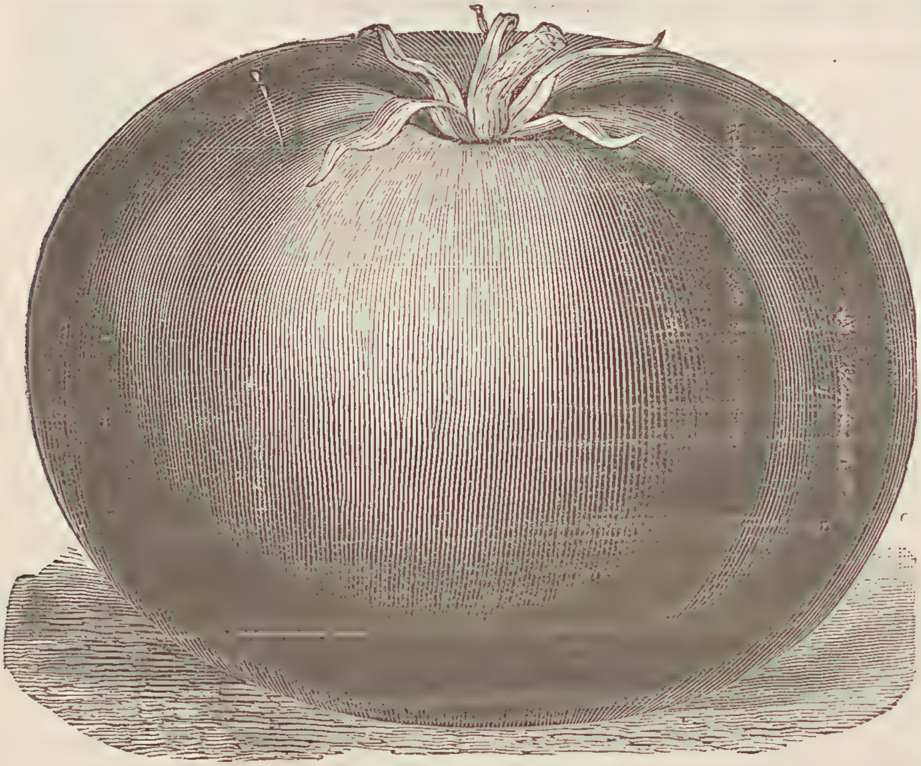
A HAPPY NEW YEAR.

◆

THE attention of our readers is called to the Income Tax Returns advertisement appearing in our columns. Forms of returns can be obtained at all post offices. Returns must be sent in at once and postage in all cases must be prepaid. Fines and interest will be imposed upon assessment of late returns.

COMMERCIAL AND ORNAMENTAL PRINTING of every description in first-class style, on the shortest notice, and at cheapest rates, at the "Australian Gardener" Office, corner of Pirie and Wyatt streets.

The Vegetable Garden.



VOLUNTEER TOMATO.

It is of large size, very smooth, and without any hard core or centre ; the color is a dark rich shade of scarlet crimson. Very early and an abundant bearer.

A Kitchen Garden Courtship.

A potato went out on a mash
And sought an onion bed ;
'That's pie for me,' observed the squash,
And all the beets turned red.
'Go 'way,' the onion weeping cried,
'Your love I cannot be ;
The pumpkin be your lawful bride—
You cantalooupe with me.'

But onward still the tuber came,
And lay down at her feet ;
You cauliflower by any name,
And it will smell as wheat ;
And I, too, am an Early Rose,
And you I've come to see ;
So don't turnip your lovely nose,
But spinachant with me.

'I do not carrot all to wed,
So go, sir, if you please,'
The modest onion meekly said,
'And lettuce, pray, have peas.'
Go, think that you have never seen
Myself, or smelled my sigh ;
Too long a maiden I have been
For favors in your eye.'

'Ah, spare a cuss,' the tuber prayed,
My cherryshed bride you'll be,
You are the only weeping maid
That's currant now with me.'

And as the wily tuber spoke
He caught her by surprise,
And, giving her an artichoke.
Devoured her with his eyes.

Operations for the Month.

It is acknowledged that French market gardeners are exceedingly skilful in growing vegetables, and raise enormous quantities of vegetables of high quality off quite small areas of land, depending chiefly on stable dung for their good results. In a recent number of the "Journal d'Agriculture Pratique," an article, referring to the use of chemical fertilisers in vegetable cultivation, appeared. This is interesting and useful, and worth reproduction. It says :—

We know what care and attention the market gardeners in France bestow on their cultivations. They neglect no precautions nor the smallest detail which may enable them to produce the splendid specimens which are admired everywhere, yet very often we are asked how a still better result may be obtained in the vegetable garden. It is a point on which many desire to still further perfect their methods.

Besides the organic manures and soils which they ordinarily use, we should advise the more frequent employment of chemical fertilisers, as, for instance, phosphates and potassic manures, for these have shown their value in cultivations on a large scale, and have rendered incontestable services in increasing the fertility of the soil, and at once improving the yield and quality of the crops. They will be found just as useful in vegetable cultivation, where at present little are used, although some gardeners have already begun to experiment with them among their vegetables.

As they have been found to be a great success, it is desirable that the practice should become more general. By adding superphosphates or kainit or sulphate of potash to the usual manure, vegetation becomes more rapid, the work is more advanced, and the legumes are of superior appearance, besides being larger and of better quality. It is a recognised fact that the phosphate manures forward the development of fruit and advance its maturity.

Potassic manures act in the same way, and their action is particularly noticeable in a time of drought, like that we have just experienced.

Owing to their hygroscopic properties, they maintain more humidity in arable lands, and their fertilising value, together with their influence in the assimilation of other components of the soil, increase the vigor of the plants

In many places it has been noticed, for instance, that potatoes which received potassic manures remained green, whilst the others had yellowed wherever potash had not been applied.

In Normandy, M. Levavasseur, having tried the potassic manures on haricots, stated that the manure, spread very early, acted immediately on the vegetation ; the portions manured—above all with potash—having resisted in a remarkable manner the drought, which destroyed all the fields of haricots in the same district. The use of phosphate and potassic acid thus presents numerous advantages in vegetable cultivation. Besides the fact that it will be able by this practice to overcome the pernicious effects of drought, it will also allow of the crop being gathered fifteen days or a month earlier, whilst containing legumes longer and heavier.

Their sale will therefore be more certain and more remunerative, and the soil will sooner be at liberty for another crop.

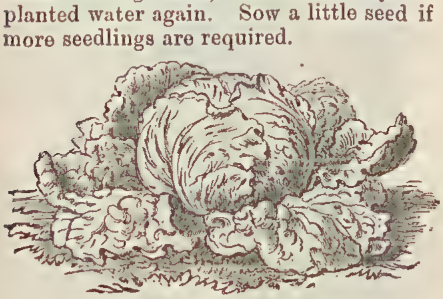
Respecting the quantities to be employed and the kind to be preferred, bone superphosphates seem to give the best results in doses of 8 to 12 cwt. per hectare (2½ acres). As for potassic manures, sulphate of potash may be used in doses of about 4 cwt. per hectare. These may be applied either immediately after the ordinary manure has been dug in, or a little on, with a superficial working of the soil.

The prospects of good weather conditions has improved so much that there is likely to be good supplies of vegetables available for use during the coming month.

PRICKLY SPINACH.

Bean, French or Kidney.—Should be producing large quantities of nice young pods in the pink of perfection, and if the pods are gathered whilst tender, the beans will continue to produce more and more for some time. A few plants may be kept for seed production, and from them no pods should be gathered, but all should be allowed to ripen. Any old beans which have ceased to bear should be removed, and the ground cleaned up, manured well, and made use of for anything other than for plants belonging to the same order of plants as beans Roots, cabbages, lettuces, tomatoes, would do very well for rotation. In order to keep up a succession of beans, a few seeds may be sown during the month.

Broccili.—Any seedlings on hand can be pricked out, and plants which have been pricked out and are well grown can be planted. The ground for these plants should be well manured. If the weather should be dry, wafer the young plants before lifting them, and when they are planted water again. Sow a little seed if more seedlings are required.



NEAPOLITAN LETTUCE.

Beet, Silver.—Sow a little seed, and transplant from the seed bed if there are plants large enough to move. The leaves only of this plant are used, and they make a very palatable dish if they are properly boiled.

Cauliflower.—This month is a good one to plant out cauliflowers from the seed-bed. In the first place prepare some ground by trenching if possible, or deep digging, and thoroughly well manuring, mixing in the manure well. If the soil is dug or trenched deep the roots of the cauliflowers can descend to a considerable depth in search of food, and are not likely then to suffer from dry weather. Select good strong sturdy plants and set them about 3 feet apart each way. Do not break or injure the roots more than can be avoided when raising the plants from the seed-bed. Sow a little seed for future supplies in a seed-bed or box where it can be shaded or watered easily.

Cabbage.—Sow a little seed and shade and water. Put out a few young plants in well-manured and well-prepared ground

Celery.—A little seed may be sown and a few plants put out in well-manured or rich ground. This vegetable will need to be well watered and also treated to occasional supplies of liquid manure.

LONG PURPLE EGG PLANT.

Carrot.—Sow a little seed in drills, taking care to separate the seeds well before they are sown. Thin out any young plants that may be coming on, and be careful to keep them free from weeds.

Kohl Rabi, or Turnip-rooted Cabbage. —A few seeds may be sown in a seed-bed. Seedlings to be planted out later on when they are large enough to move.

Lettuce.—Instead of planting out from the seed-bed it will be better at this season of the year to sow in rows in a richly prepared bed in the garden and thin out the plants to about 9 inches apart when they come up. If lettuces are transplanted just now they are very apt to run to seed.

SHALLOTS.

Maize, Sweet.—It is late to sow seed, unless it is done very early in the month and then only in the warmest districts.

Potatoes.—Prepare a bed for planting by deep digging, well draining, and heavily manuring. When ready, plant some variety of the kidney potato. Use medium-sized whole tubers, for they will probably succeed better than large ones cut in two or more pieces. The rows should be from 2 ft. 6 in. to 3 ft. apart.

Radish.—A supply of this vegetable, if young and tender, is always useful. It can be sown during every month of the year. A very little seed should be sown at a time. If well grown the tender leaves may be eaten as well as the root. Make the ground fine and manure well with rotten dung. Sow in little rows, thin out, and keep free from weeds.

Red-beet.—Sow a row or two of this useful salad vegetable on some ground that had been previously heavily manured for cabbage, potato, or some other crop. The seed will probably take a long time to come up, especially if the ground is dry. If it be thoroughly soaked in water before it is sown and the drills in which it is sown are also well watered it will come up much sooner than otherwise.

Savoy.—Sow a little seed. This is one of the best of the cabbage class, which will succeed to the greatest perfection in rather cool districts, although it may be grown in almost any part of the colony.

GOLDENBALL TURNIP.

Tomatoes.—In most gardens there should be good supplies of ripe fruit. Some means should be adopted to keep the branches or vines from lying on the ground and thus rotting the fruit. They are awkwsrd plants to tie up if allowed to attain full growth before the tying up is attempted. The work should be done as they grow. Bundles of sticks, prunings of fruit trees, or dead branches of trees can be spread under the plants, and this will answer in a rough way to serve the purpose.

The month of January is generally considered to be an "off" month for vegetables, and there is often a scarcity if the weather proves dry; but, with a little care and trouble, if a good supply of water is available, quite sufficient may be raised for all requirements.

Roses; All the leading varieties, half-standards, 1s. each

Fruit Trees; Orange, Lemon, Peach, Apple, Pear, Plum, etc

HARDY SHRUBS, Trees, Climbers, etc.

BULBS, Hyacinth, Daffodil, Anemone, Tuberose, Gladiolus.

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The Flower Garden.

The Amaryllis.

[By J. Cronin.]

Amaryllis is a genus of deciduous bulbous plants found native in South Africa, consisting of a single species, A. belladonna, of which there are several varieties. The genus at one time included plants now known under the names of Vallota, Sprekelia, Zephyranthes, and Hippeastrum, the last mentioned being still included in Amaryllis in many gardens and trade collections. Amaryllis belladonna—the belladonna lily and its varieties—produces its blooms without foliage during summer and autumn, the leaves develoding after the flowers die. The growth of foliage continues throughout winter and spring, the foliage dying and the bulbs resting during the greater part of summer. Hippeastrums are natives of Braril and other parts of tropical South America and the islands adjacent, and vary greatly from Amaryllis in the production of their flowers, and the flowers also, which develop with the foliage during spring and summer, the bulb resting during winter. Hippeastrums have been greatly improved by horticulturists, various species being hybridized with success. The hybrids are far superior to the original types in size of flowers, range of colour, and form Sprekelia is also a native of tropical South America. The only species cultivated in our gardens is S. formosissima which bears singular but beautiful flowers of a bright crimson colour. Vallota purpurea, a native of South Africa, flowers during autumn and is one of the most beautiful of bulbous plants, the blooms being large, cup-shaped, and of a brilliant shade of colour. Zephyranthes are small, bulbous plants producing white and pink flowers. The whole of these are hardy plants in the greater part of this State, and may be grown successfully in most of our gardens.

AMARYLLIS FORMOSISSIMA.

CULTURE.

Amaryllis belladonna is probably the hardiest bulbous plant cultivated. It requires an open position and good drainage and under such conditions it will thrive in most soils with a minimum of attention. It is a splendid subject for large dry borders, producing its delicate pink flowers, which are borne in umbells on long stiff stems, freely for several years without special assistance. Bulbs should be planted during summer at a depth of about six inches below the surface in unmanured soil. They are most effective when planted in patches containing many bulbs, which should not be disturbed for several years except for the purposes of increase which is effected by offsets from the large bulbs. The bulbs should be planted sufficiently apart to provide for increase, about six inches being enough. There are several fine forms of the belladonna lily including A. blanda and Baptisti, white; magnifica, major, rubra, multiflora, and purpurea, of various shades of rose and purple. These are scarce and fairly expensive, and usually receive much more care and attention than the ordinary type, though requiring practically the same treatment.

Hippeastrums are magnificent plants for the borders, requiring a sunny position and well-drained soil of rather light texture. Unless the soil is very poor no manure is needed, and even in poor sandy soils an admixture of clay or strong loam is preferable. If manure is added to the soil it should be thoroughly decayed cow manure, and should not come into contact

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with the bulbs. Planting should take place during late autumn or winter, the proper depth to plant being that occupied by the bulbs before removal, viz., the crown or neck of the bulb showing at the level of the surface. Hippeastrums require fairly moist conditions during the season of active growth, and as little water as possible when at rest. They are admirable subjects for pot culture, some fine specimens being occasionally seen at horticultural meetings. An evergreen species (H. reticulatum) bears foliage striped with white in the centre, and flowers of shades of pink. Several fine hybrids have been raised between this and other species, retaining most of the characteristics of reticulatum. In most of the local nursery and seed catalogues hippeastrums are referred to as Amaryllis hybrids, some of the finest varieties being comparatively rare and expensive.

Vallota purpurea requires almost identical treatment with hippeastrums, and is specially suited for pot culture. Several bulbs should be grown in a fairly large pot in well drained loamy soil. They should remain undisturbed until the pot becomes too small owing to the increase of bulbs. Over-potting and disturbance are the most general causes of their failure to bloom. The soil should never be allowed to become dry. Bulbs of vallota are plentiful and fairly cheap.

Zephyranthes require a moister situation than the hippeastrums, otherwise the culture is practically identical. Z. carinata is one of the best kinds.

Notes for the Month.

Frequent light cultivation will keep the soil in a condition tending to the maturation of wood growth. In too many gardens the plants are prevented from producing ripened growths and perfect flowers by being incessantly watered during the whole of the summer months. Such watering causes a forced growth from buds that normally would remain quiescent during the greater part of summer, and would have steadily developed and produced fine bloom in season, while the soft forced growths are usually destroyed by the great heat and hot drying winds of summer. Roses are often treated thus, instead of being allowed to assume a state of comparative rest during January and February, after which, if lightly pruned and thinned, and thoroughly watered the teas and hybrid teas will develop growths that will produce an abundant supply of flowers, fine in character. Newly planted roses, and other plants and shrubs, not thoroughly established, require watering during summer, as also do such plants as phloxes, bouvardias and others that normally produce their flowers at that time.

CACTUS DAHLIAS.

Beds for the reception of dahlias intended for the production of blooms for autumn exhibition should receive a final digging or hoeing now. If the ground was deeply worked and manured earlier, a light stirring of the surface will be sufficient; if not, a moderate dressing of rotted stable manure should be thoroughly mixed with the soil to a depth of about 2 feet. Light sandy soils should be thoroughly trodden before planting, especially if they contain, as they should, a fair proportion of manure. If the soil is too free and open a coarse heavy growth will follow with flowers lacking quality. Dahlias require a fair amount of room, and when grown in beds should be planted in rows three to four feet apart, with two or three feet between the plants. When planting dahlias from pots care should be taken that the bulb of soil is not broken by the removal, a likely contingency if the soil in the pots is dry. The plants should be thoroughly watered an hour before planting is attempted, when a sharp rap on the edge of the pot, held inverted, will detach the plant without disturbing the soil. Plants should be set out slightly below the surface level, and sufficiently watered to moisten the soil thoroughly. Tender plants should be shaded from hot sunshine for a few days. Divisions of crowns are equal to green plants for all purposes.

Chrysanthemums should be staked and the growths supported as they progress. The shoots should be reduced to four or five at most if large blooms are desired. Any lateral growths or suckers occurring should be removed. Artificial watering will not be necessary at this stage, unless the soil is of a very dry nature.

Daffodils require to be planted in fresh soil occasionally. Three years are considered long enough for the bulbs to occupy a bed or patch. The bulbs may be lifted after the death of the foliage, and be immediately replanted, or dried and stored until February. Ground for the reception of the bulbs later should be prepared soon. In very poor dry soils a dressing of cow manure may be dug deeply into the beds or patches, and a little bone-dust worked through the soil nearer the surface.

DOUBLE GLORIA DAHLIA.

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Annnal and biennial plants approaching the blooming stage should receive sufficient water to thoroughly moisten the soil during dry weather. Bulbs of gladioli may be planted for late summer flowering. They require deeply worked and well enriched soil to produce good flowers.

Hardy Bulbs and Tuberous-rooted Perennials.

[By E. V. Hallock, in "The Florists' Exchange."]

The most interesting, the least known and the most misunderstood of flowering plants are bulbs. In the form of a bulb the latent flower is cared for more easily and longer than in any other form. Bulbs have been used as sustenance for armies, and the caladiums are now used to some extent by Spanish-speaking people, and through the South, as an article of diet.

This paper will not touch on what are known as Holland bulbs, but will embrace Summer-flowering and Winter-flowering bulbs that are used by the amateur and the professional. The profession of raising bulbs for market and for the amateur is vastly different from the profession of raising flowers for market. The person who raises the bulbs seldom sees the flower in so great perfection as the man who flowers the bulb.

Noted Amateur Bulb Growers.

There are many skillful raisers of bulbs among the amateur cultivators, and in fact I think many amateurs have come to a better understanding of the wants of many kinds of bulbs, and raise them in greater perfection, than any professional. These amateurs, however, do not cover a very wide range of bulbs.

Unless a person has seen the late Peter Hanson holding a bulb in his hand, rapt in blissful contemplation, slowly telling the wants of the bulb in cultivation, describing its habit and its flower minutely, he has no idea of what a hold on the affections a bulb could exert. Mr. Hanson's time and devotion were expended on the lily. He over-estermated its necessities. As I have always found, if you can get a bulb growing you can dispense with many of the directions for growing. but Mr Hanson, no doubt, took as much pleasure in catering to the growth as he did in seeing their flowers.

I think it is about time I got down to the subject of bulbs and bulbous plants. I well know that a paper of this kind to a man who does not raise bulbous plants in a commercial way, or as an amateur, is postively without interest. Of course any one knows that a person could talk all day on one class of bulbs, but I propose to skim the subject very lightly.

Some Useful Bulbs.

The most useful, valuable, and generally raised classes of bulbs to my mind, are as under; their relative proportion of value is indicated by the order in which they are named.

Gladiolns, lilies, freesias, peonies. tuberoses. iris, the Japanese and German, the forcing irises, and many beautiful species.

Professionlly speaking, the introduction of so important a plant as the freesia useful and beautiful as it is, so easily kept and readily flowered by both the amateur and the prfessional. was a fiasco in the sense that no particular person or firm was responsible for its introduction, and no considerable amount was made by any one with this plant that is so generally used.

The amaryllis, to me, has always been an important family. The habits of most varieties can be so changed that they will flower outside in Summer or inside in Winter. I much regret that this plant is not more largely grown in this country.

The tuberous-rooted begonias have taken their place as Summer-flowering, as well as Winter-flowering bulbs.

Caladium esculentum is rather largely used as a Summer foliage plant

Cannas are most important of the rhizomatous class of plants. Every one knows a good deal about this class of plant, A canna society has even been suggested.

The cinnamon vine (Dioscori battatus) hes some value, particularly to the person who sells the bulbs. It is a clean hardy vine and one peculiarity of it is, that the root grows deeper and deeper in the ground the older it gets.

Gloxinias are being raised largely and sold very cheap.

Hyacinthus candicans first attracted attention in this country at the Philadelwhia Centennial.

Incarvillea is a coming plant, particularly as a garden flower, and undoubtedly can be forced. It has a large fleshy good keeping root; foliage rampant, growth somewhat resembling a fern with immense spikes of gloxinia-like flowers. If you plant 500 strong roots, the flowers will absolutely come in bloom the same day. It is claimed that the roots are hardy

Madeia vine bulbs keep almost indefinitely and are therefore good bulbs for storing.

Montbretias. Why this plant is so neglected I cannot tell. It has many good qualities, is easier to raise, easier to keep, and will continue in flower much longer than the gladiolus. The sprays are exceedingly graceful and beautiful. The newer varieties are very striking. The bulbs are nearly hardy.

Oxalis. The summer-flowering varieties of this bulb are largely planted and have some merit, while the winter blooming sorts as lutea, Bowei and the so-called Bermuda buttercup, are among the best of the winter flowering plants.

Peonies. Can I tell the members of the Peony Society anything about this plant? I think not; but by the way, it just occurs to me to say that I have bought the last three or four years from the most reliable firms who raise peonies some twelve or fifteen of the best varieties, several plants of each kind. for my private garden. When they bloomed this year, should you take out four of the best colors there would be nothing worth speaking of left. Marie Lemoine is what I call a good peony.

Dahlias, as we very well know, are an important class of plants. These alone could be made the subject of a long talk. At one time there was a Dahlia Society, perhaps there is one now. I will only touch on a few points. Many seedlings will bloom the first year. Many beautiful varieties produce few flowers. With all the many varieties, a sort that will commence to flower early and continue all the season with a profusion of bloom, and do it every year, will always have some value. It is a well known fact that the single sorts are the most reliable bloomers and produce the most flowers.

Notwithstrnding the fact that bulbs and bulbous and fleshy rooted plants form the most important division of flowers they have never had such close attention from our professional class as cut flowers simply because there is not the money in them, They are slower to produce, and the outlet is through smaller channels than if they belonged to the more profitable branches of the profession.

SOME GOOD LILIES.

Lilium psrdalinum from California is a good keeping, free, and sure-flowering lily. Ninety-five per cent of the bulbs should bloom.

Lilium Parryil is a very handsome variety from California and is not difficult to bloom. The California bulbs, like calochortus, brodiæas, erythronium and comassias, are all beautiful things and really can be flowered if their requirements of cultivation are met.

On the line of Lilium Humboldtii, I will ask what is the use of planting Lilium candidum in the spring ? Yet many do it.

I suppose it would be well to mention what I consider the most valuable kinds or species of lilies. The auratums are a magnificent class and very popular with most amateurs. The varieties of speciosum I consider one of the most reliable sorts for the amateur to plant.

Double and single tiger and our native lilies canadense and superbum, are being used in great numbers each year, on large estates and in gardens of all kinds. They are low in price, reliable bloomers, and very graceful, particularly canadense.

The elegans—or umbellatum, or Thunbergianums—are very reliable bloomers, easy growers and good keepers, and many varieties are very handsome

Ot course we could easily talk all day on the lilium family, but we shall have to stop somewhere. Lilium candidum and what is known as the Bermuda Easter lily are the most important ones for florists' use. To me it is a more beautiful lily than the Bermuda Easter lily. There are several varieties of candidum, but the broad scale, large bulb variety raised in the north of France is the only one worth forcing. There has been more said and more can be said on the Bermuda Easter lily than ten such papers as this would contain. I think the subject has been pretty well thrashed out up to the present time.

FALLACIES IN CULTIVATION.

There are some fallacies in cultivation. Many directions were put in type years ago, when they were thought to require very careful and necessary cultivation There is a lot of this type that seems to be set up at the present time.

I will take as an illustration Iris Kæmpferi. In 1878 we bought Professor Pringle's entire stock of this plant. There were many very fine varieties, and many of the kinds are sold to-day. We noticed that the clumps when being sub-divided for planting had a large centre that was entirely dead or dried up, in many you could put your hand right through the centre. This came from leaving the clumps too long before sub-dividing. We were told that this plant required damp low ground, and if it could be covered by water occasionally it would be better. We planted them on common Long Island plains' soil, 2 ft of soil above clear sand 50 ft above water. William Falcner in describing our plantation of iris, said he walked "waist deep" through the plants; when transplanting a field of these, we used a cart and wheelbarrows, and sub divided the clumps with an axe. One year we left several hundred plants along a driveway on top of the ground, when transplanting in the Spring. In the Fall these plants were alive. Personally I don't think it is necessary that Iris Kæmpferi should be flooded with water to produce a good growth.

As this subject seems to be large, and it is necessary and proper that this paper should be short, it is difficult to give anything of real value, But the subject may excite an interest in more people then have ever given it a thought before, and I assure you that it will furnish you a new interest so far as you desire to go.

BULBS FROM ARID DISTRICTS.

Bulbs represent one of the most wonderful provisions of nature in the vegetable kingdom. Those grown in arid or desert countries conserve their vitality intact longer than bulbs grown anywhere else. The Mexican bulbs, grown mostly in arid wastes will remain in perfect condition when kept out of the ground a year If believe that bulbs of Amaryllis formosissima will remain two years out of the ground in good condition.

It seems to be a provision of nature to preserve the life of a plant by building around the germ a bulb and this is one of the most convenient and compact or protective forms.

The most striking fact about all bulbs is their endless variety and great beauty, often extending to magnificence. It is this which gives fascination to the subject and makes the raising of bulbs a labour of love.

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DRUMMOND BROS.,

144 Rundle Street.

To Correspondents.

Albert Weston enquires as to the simplest and most effective tick proof roost. Answer.—There are a great number of methods, all supposed to be perfect. Perches suspended on wire with wire stays are good, but the simplest and most certain of any we have seen was made as under. Suppose the roost-house to be 6 ft long. Take four lengths of 3 x 2 and cut to the height you wish the perch, nail on top two 2 x 2 with the edges taken off, nail on battens on both ends the width you desire the perches apart. Get four kerosene tins and place the posts in centre of them, having nailed on strips of wood to keep them firm, one near the bottom and one the reverse way about half way up the tins, these form a cross and when properly fixed the posts cannot move. Now place in the tins stones to within about 5 in. of the top to weight them, then fill to within an inch of the top with water, and keep them to this by refilling as the water sinks. Add a little kerosene, which will prevent the fowls drinking the water. Nail a piece of tin on each post back and front four inches from top of tins to keep out droppings from fowls.

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Tuberous Begonias.

This most beautiful class of handsome flowering plants has been wonderfully improved during the last few years. They are invaluable for the decoration of the greenhouse or conservatory where they produce a magnificent and dazzling display. Their handsome large flowers, often measuring 4 inches in diameter, are of the most brilliantly varied and delicately beautiful shades, from the purest white to the deepest crimson, including yellow, bronze, rose and other intermediate shades. These Begonias are also eminently adapted for bedding, and are largely used in England and elsewhere for this purpose.

Double Tuberous Begonia

Begonia International Prize Tuberous. Single and Double. An unrivalled strain, saved from the best selected blooms of the finest English, French and German large-flowered hybrid varieties; of superior size, form and colour. Sealed pkts., 2s. 6d.

Begonia, Hybrida Marmorata fl. pl.—The plants are of sturdy habit and produce upright-standing, very double flowers of great size (up to 4½ inches in diameter), with beautifully spotted and marbled petals. When in full flower these robust free-blooming plants, with their ample dark green foliage are most attractive. 1s. 6d. pkt.

Begonia, Single, Tuberous-rooted, choice mixed. 1s. pkt.

Begonia, Double, Tuberous-rooted, choice mixed. 1s. 6d. pkt

Begonia Marmorata fl. pl.

Gloxinia.

Greenhouse or stovehouse perennials of great beauty. The most lovely combinations of colour are found in their large campanulate flowers, which stand about 6 inches above thick grand leaves of the finest silky or velvety texture. The seed is easily raised in a moist heat. Sow from September to December. They thrive in a warm, rather close atmosphere requiring plenty of moisture at the root, but little or no watering overhead, which is likely to rot the flowers and leaves. Avoid cold draughts of air. The soil must be light and rich, and well drained.

Single Tuberous Begonia.

Gloxinia, Hybrida Grandiflora Crassifolia. Finest exhibition varieties, mixed colours. 1s. and 1s 6d. pkt.

Gloxinia, New French Tigred and Spotted Varieties.—Saved from a selection of the finest of these most beautiful varieties, of immense size and great substance, rich colours. 1s. 6d. pkt.

Gloxinia, Defiance, "The Scarlet Gloxinia."—Large erect flowers, glowing crimson scarlet; the edges of the petals are delicately frilled which adds considerably to their appearance. 1s. 6d. pkt.

New Giant Gloxinia (GLOXINIA HYBRIDA GIGANTEA)—This strain produces flowers of quite unusual dimensions. The seed is gathered only from strikingly beautiful flowers, which measure 4½ to 5 inches across, and the show of colour thus produced is rich and varied in the extreme. 1s. 6d. pkt.

Gloxinia.

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Heuchera sanguinea.

Heuchera Sanguinea Maxima—A greatly improved variety, of vigorous growth, flowering more profusely and producing larger blossoms and longer flower spikes than H. sanguinea; bright deep crimson; perennial. 6d. pkt.

Nicotiana Affinis Hybrida—New hybrids of the sweet-scented Nicotiana affinis, producing compact bushes of vigorous growth, with large flowers of various shades, ranging from white to pink, red and violet. 6d, pkt.

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Nicotiana Sanderæ (New Hybrids)—Awarded four gold medals. Have attracted universal attention at all the great Flower Shows in England. These are the hardy annuals of the century The colours are purple, white, pink, dark and light red, crimson, violet, salmon. They thrive in any soil or situation. As a cut flower, they are charming by daylight or artificial light. Its hardiness and character of producing flowers continuously are very great recommendations. 6d. pkt.

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Schizanthus Wisetonensis—One of the finest novelties of recent years. These charming new long-blooming varieties form a mass of bloom. The foliage is very graceful, and the colors of the flowers vary from delicate pink and white to rose and crimson; carefully selected strain. 6d. pkt.

Schizanthus Grahami nivens,

The foliage is bright green and finely cut, and the flowers are snowy-white and very fine; very useful for bouquets. 6d. pkt.

Hibiscus "Sunset."

New Giant Yellow Hibiscus "Sunset" (Hibiscus grandiflorus) — Immense light clear yellow flowers with black centre. 6d. pkt.

New Emperor Salpiglossis—Finest mixed - A magnificent strain, very large flowers, and beautiful colors, about 2½ feet high. 6d. pkt.

Inula Royleana—The true species from Himalaya; a magnificent hardy perennial, about 2½ to 3 feet hign, with large yellow flowers of more than 3 inches in diamecter. The buds are black. 6d. pkt.

New Emperor Salpiglossis.

Inula Royleana.

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ROSES

The Forcing of Roses.

(Continued from last issue).

After the roses have started into growth it will be well to give them an application of liquid manure once in two weeks. It will generally be advisable to pinch off the first flowers that form, that the plants may throw all their vigor into the development of stems and leaves.

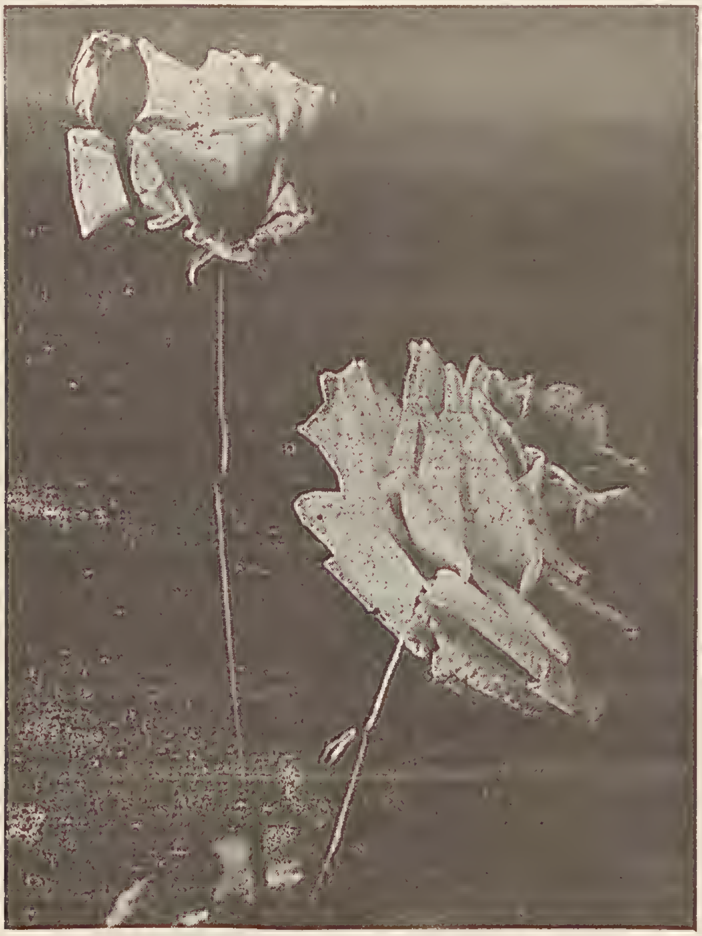
From the first benches planted cuttings can be taken, and as soon as the crop is off the bed should receive an application of ground bone at the rate of one pound to 25 square feet. This should be slightly worked into the soil, and the bed covered with manure. A half inch of sheep manure will be preferable, but if this cannot be obtained three-fourths of an inch of cow menure will answer. Unless mineral manures are relied upon, the application should be repeated once in two months. During dull weather the mulching should be thin, but as it brightens the amount used may be slightly increased.

It is believed by many growers that the diseases known as 'black spot,' and mildew and the other troubles, such as blind shoots and imperfect flowers, may be attributed, at least in part, to the stimulating effects of stable manure. While they are not caused directly by its use, there can be no doubt that the large quantity of sheep and cow manure used by many florists promotes a soft, watery growth that is particularly susceptible to disease, and what is more to be dreaded, that a slight neglect, such as an improper temperature or the application of too much water will give the plants a check that will result seriously to them. The use of mineral fertilisers, on the other hand, tends to develop earlier, larger and better flowers, and the plants will be stronger, and with firmer stems and foliage, that will be less likely to be injured by neglect and disease.

For these reasons it is a growing practice with many of our most successful rose growers to rely largely upon mineral manures. These fertilisers can be broadcasted either in a dry state or in water. For roses a good mixture will consist of one part nitrate of soda, two parts of sulphate of potash, and ten parts of ground bone. These should be thoroughly mixed and applied broadcast at the rate of one pound to twenty-five square feet of bench, or at the rate of one pound up to four pounds, according to the size of the plants, in 50 gallons of water. When roses are growing the broadcast application can be repeated once a month, but a less frequent application will be better for small plants, or if there is but little growth. The liquid applications can be made much more frequently, but care should be taken not to use too large a quantity of nitrate of soda, or sulphate of potash, as if applied in excessive quantities they will check the growth and even kill the plants When the ground bone has been scattered upon the surface and mixed with the soil an excellent liquid fertilizer is made by placing one pound each of the nitrate of soda and of sulphate of potash in two hundred gallons of water fsr young plants, which amount may be decreased to one hundred gallons of water when the plants become full grown, applying at intervals of from two to four weeks. The best time to apply liquid manure is in the morning, when the beds are a little dry, as it will then be more evenly distributed through the soil. When nitrate of soda and sulphate of potash are used as a top-dressing one pound of each to two hundred square feet of bed will be ample.

Unleached wood ashes afford a desirable source for potash and phosphoric acid, and may be used at the rate of a bushel to two or three hundred square feet of bed. The potash will promote the development of firm, short-jointed wood, and, combined with the phosphoric acid, will favor the psoduction of flowers. Many florists still cling to the use of liquid fertilisers made from animal manures, and one of the best mixtures is composed of a peck of hen manure and a half bushel of sheep manure in one hundred gallons of water. The food contained in the few inches of soil in which roses are grown is soon exhausted, and it must be replaced in some way. The top-dressing of sheep or cow manure answers fairly well for this purpose, as well as for a mulch to keep the weeds down after the roots of the roses have filled the soil so that stirring the surface will injure them, but it is unsightly, and keeps the surface wet and sour and prevents the ready access of the air to the roots, so that, although it is of much benefit during the summer months, it is a positive drawback during winter.

All fallen and diseased leaves should be removed and burned, and the surface of the bed should have an occasional stirring, to admit the air and to prevent the baking of the soil, but care should be taken not to disturb the roots. In addition to the other work mentioned, it is



KAISERIN AUGUSTA VICTORIA.

desirable to be prepared at all times to fight insects and diseases.

The varieties of roses that will be most profitable will depend to a large extent upon the character of the market as well as upon the character of the soil available for growing them in. To be profitable, a variety should have a good constitution; it should be a vigorous grower, with strong upright stems; the foliage should be of rich color and good substance, and free from any tendency to disease; the flowers should be large and single on the stems, of a clear color, and in the case of the red sorts without any tendency to turn purple. They should be double enough not to show the centre, and the plants should have a long and steady season of flowering. Among the varieties that are most commonly grown are Bride, Perle des Jardins, Catherine Mermet, and American Beauty. To these should be added Mad. Caroline Testout, Kaiserin Augusta Victoria, Bridesmaid, Mrs W. C. Whitney, President Carnot, and Meteor, of more recent introduction, which are fast coming into favor.

American Beauty has no rival in its class, and its flowers are always in demand at good prices. Its flowers are rather small in summer and the petals soon take on a purple color, but when well grown it is a grand rose. Many growers who are successful with most sorts fail with this variety, which will only succeed with the very best of care. It needs a strong stiff soil and a temperature at as near sixty degrees as can be secured.

Bride is the favorite white variety. It also needs a rather heavy soil, and should be started early. The temperature for this sort is fifty-six degrees or a little below. With close attention to ventilation this is a very desirable sort.

Mermet was for many years the best pink variety, but the fact that it is of a very light color during the dark days of winter, and like the Bride, which is a sport from it, quite subject to mildew, has lessened its popularity. It requires the same care as the Bride, and if given a low temperature at night, careful ventilation during the day, and if sheltered from cold draughts of air, it is still a desirable sort.

Bridesmaid, a recent candidate for a place in the list of commercial varieties, is a little deeper pink than Mermet, and has the marked advantages of holding its color and being comparatively free from the attack of mildew. Wherever it has been planted it is the most popular pink sort, and it is rapidly supplanting Mermet. It thrives at a medium temperature.

Testout is another variety with large flowers of a pure pink color. It is rather particular as to soil and care, and although a fair variety for winter when well grown, it is too single for summer use. Valuable for the amateur. It should have not less than sixty degrees and it likes a yellow loam soil.

Meteor is one of the best red, ever-blooming roses, but to be successfully grown it should have a house where a temperature of at least sixty-three degrees can be given, while it will luxuriate at sixty-five to sixty-eight. It is naturally quite likely to be attacked by mildew and red spider, unless great care is taken with the ventilation and syringing.

Kaiserin is a good summer variety and has a long season of flowering, but is generally considered a failure as a variety for winter flowering, as it is likely to take on a greenish white color.

Mrs W. C. Whitney is an early and a free flowering variety. It has an excellent foliage, is a vigorous grower and has long stems. Its flowers are large and full, and of a pure deep pink.

Among the older sorts that are still much grown are the Bon Silene and Papa Gontier, carmine; Sunset, a strong-growing buff variety, and Duchess of Albany

(To be continued).

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The Dairy.

Teaching a Calf to Drink.

There is generally some difficulty experienced in teaching a calf to drink. The 'Farmer and Stockbreeder' suggests trying the following interesting but not very convincing American method:

Fix things so the calf can never suck its dam, and when the cow has mothered it for a few hours milk about 3 quarts of her milk into a pail; put it up under the calf's nose so as to touch it, and in a minute it will drink from the word 'Go, and you have won out, and kept your piety besides. A calf that has never sucked will drink as readily as it will get the hang of finding its own dinner.

By the same rule, a heifer should always be hand-milked, and then she knows no other way. Let the calf run with her a few days, and then to milk her is, in her way of thinking, robbery' of her calf, and you have to break her, which often is quite a vaudeville show, and often of somewhat unpleasrnt memory. From the start play that you are the heifer's calf, and make her believe it, and to the calf be its god of the feed dish, and two disagreeable things in dairying—breaking heifers and teaching calves to drink—are made into pleasant pastimes.

Scours in Calves.

The cause of this disease may be traced to a variety of sources, such as dirty buckets, dirty feeding troughs, bad housing, and irregular feeding. Milk is of such a sensitive nature that it absorbs impure bacteria from any source where the impure germs may be located. We cannot, therefore, be too careful in handling the milk used for calf-feeding. The troughs or vessels from which the calves are fed should be daily scalded and rinsed with a little limewater. At the College we have a pen for each calf, and they can therefore get their own share of the milk; whereas if all fed from the same trough the quick drinkers would get more than their share and sickness would be the result. Our feeding is done from enamel basins, which are washed every day and rinsed with limewater. A great deal of sickness amongst calves is brought about from the effects of the animals sucking each other; this means that a quantity of hair to a more or less degree is consumed. This habit will not be found where the calves are fed separately.

Treatment.—Add ½ oz. of formalin to 1 pint of distilled water; place the solution in a dark or amber-colored bottle, and keep in a cool place. A tablespoonful of this mixture should be added to each pint of milk to be fed. Adhere to this treatment until tha calf recovers. The formalin solution should be added to the separated milk as soon after separation as convenient.

Second Recipe.—Carbolic acid, 10 to 30 drops; tincture of opium, 30 drops; gentian, 30 drops; aromatic spirits of ammonia, 30 drops. Give in half a pint of warm water or milk. Repeat the dose once daily until the calf has recovered.

I have been feeding the calves here for the past three years on separated milk, adding from 2 to 3 lb. of pollard for each calf, quantity according to the age of the animal; the pollard is cooked and mixed with the milk. Maizemeal also should produce good results. For the first week the calf is led on whole milk; this is gradually reduced to equal proportions of whole and separated milk; and when the calf is from three to four weeks old, pollard and separated milk. The calves should have access to green feed or steamed lucerne or oaten chaff. Irregular feeding will cause unsatisfactory results. I would strongly recommend pasteurizing the milk before feeding.—J. Mahon, principal Queensland Agricultural College.

Dairying Hints.

[By H. P. Sutor, Dairy Expert.]

1. Observe cleanliness in all work at the dairy. Adopt the motto of clean milking, clean yards, and clean cans.

2. If you do not use a cooler, keep each separation of the cream separate until the temperatures are uniform, and then mix.

3. Coolers should be used at all dairias. They are not very expensive, and will result in a marked imprevement in the condition of the cream supply and in an increase in the monthly cheque.

4. Allow the free access of sunlight and pure air to the milking sheds, etc., as sunlight is one of our greatest purifiers, and costs nothing.

5. Lime should also be freely used in byres, and lime-water for finally rinsing out cream cans. By using lime dairymen will ensure the supply of better conditioned cream to our factories.

6. Remember that all factories are anxious to receive good cream, and should reward dairymen for their trouble by grading their supplies according to value.

7. If your cream cans are received from the factory in a dirty condition write and complain to the manager or proprietor, for they should see to your interests, seeing that it is also to their interest to secure cleanliness in supplies.

8. When separating, aim at producing 1 lb of butter from not less than 2½ lb of cream, say 40 to 50 lb of butter from 100 lb of cream. Cream of this consistency keeps best, but thin cream ferments early, is a poor keeper, and commands lower values per lb of butter. It also means an unnecessary increase in railway freight and cartage.

9. If you wish to get the best returns observe cleanliness, coolness, and early delivery to the manufacturers.

10. Remember that the demand for good butter on the world's market is unlimited, and so long as good quality is given an all-round profitable price can always be secured.

11. If you must hold cream more than a day add a small quantity of saltpetre (say half a tablespoonful dissolved in a pint of cold water), and mix it with the cream. This quantity will do for a 10-gallon can.

12. Fine dairy salt, ½ lb to the can, well stirred into the cream, is very beneficial. Stir your cream every night, last thing, and cover it with muslin.

13. Never use rusty cream cans. Such a practice recoils on the sender, as it produces poor quality butter of a tallowy nature.

14. Separators should always be cleaned thoroughly after each separation, and the parts well aired. Only dirty and careless dairymen wash their separators but onse a day.

15 Remember that carelessness leads to your cream being put into lower grades, and consequently lower values are returned to the negligent suppliers.

16. If you get lower values, make a careful examination of your methods before writing to the factory for an explanation. It may be your cream was kept too long and developed a stale flavor, that it was thin and fermented during transit, that it possessed a weedy flavor, or had other defects.

17. When delivering your cream at the railway station or the factory, be careful to cover it with wet bags or a white calico covering, and to place it in the coolest place possible, preferably where it will be in a draught.

18. Milk-suppliers should always empty skim milk from cans as soon as they are returned to the farm each day and immediately wash the cans.

19. Cans should be kept in a place free from dust, and be left uncoverod.

20. When purchasing cream or milk cans see that all the seams are flushed smooth with solder. Open seams are simply lurking grounds for bacteria, which cause the early souring of cream and milk and the development of off-flavors.

Strainers should be kept scrupulously clean and be well scalded just before using. Where cloth is used several pieces should be kept, to allow of frequent changing during milking.

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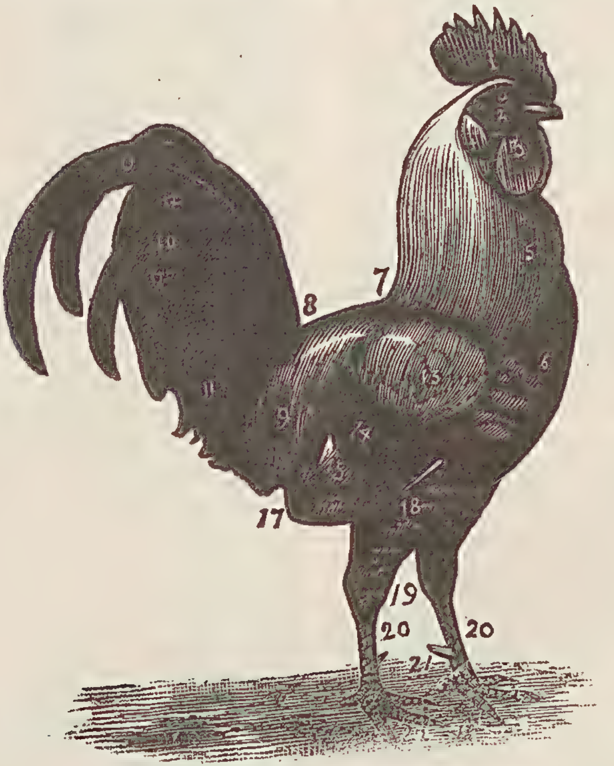
The Poultry Yard.



For explanation of points see previous issues.

Diseases of Fowls.

Every living thing has its own particular vermin, both internal and external, and possibly poultry, of all creatures have the greatest number and variety. It is claimed by some writers that a few vermin on ordinary healthy fowls in no way affects their health it being when such multiply exceedingly that they do harm and when such time arrives it most frequently happens the host if a chicken,has become so emaciated from their effects that the application of remedial measures but hasten death, again showing that parasitic troudles are just like diseases—prevention, in every instance, is better than cure, i. e., clean fowls can be easily kept clean, while the internal and external parasites, when but few can be easily exterminated.

Some scientists tell us that external vermin on domesticated fowls reach upwards of a score of varieties, others about half that number. Some make two groups of them, lice and mites; the definition of others is lice, mites, ticks, and fleas,and and for the purpose of this article such definition is sufficient.

All lice are what is known as pennivorous that is living on the feathers and outer scales of the skin, but not puncturing the integument in search of their natural food, the damage they do is therefore, not nearly so severe as is the case with the blood suckers.

Some of the parasites—all lice and some mites—live permanently on their hosts, while others—fleas, some mites, and ticks—go to and fro. Some live entirely upon the skin, deep amongst and at the root of the feathers, some live like ticks with their heads against the skin, and their bodies erect, while another sort live between the barbs of the feathers, and all are encouraged to live by dirt. The flea is abundant in dirty fowl runs, particularly those of a sandy nature and in filthy nests, they are devoid of wings, and provided with sharp, piercing mouths and go only on their hosts to feed.

These parasitic infestations of poultry cause far more loss than breeders imagine, from the fact that when fowls are kept in large numbers, the owners rarely examine them by handling, and the cause of their lack of thriving and poor condition is rarely considered or ascertained. The evil is thus allowed to spread unmolested, general unhelthy conditions resulting. Parasites of one or two sorts are most injurious to young chickens and broody hens, and are the frequent cause of a hen abondoning her eggs, and the failure to bring out chickens is frequently due to the irritation caused by these pests, while it is nothing for broody hens to die on their nests through being robbed of their blood, and even when death does not result, the constitution is frequently so weakned as to cause predisposition to other diseases. The external lice of fowls are entirely different from those found on the turkey,the guinea-fowl, or aquatic birds, and any one of the varieties peculiar to one bird will not live on the other, and all are distinguished from the mites by having six legs the mites having eight, the junior ones however of the later manage to hobble along on six legs, a pair of hind ones developing later in life Different species of the vermin are partial to particular parts of the bird's body the favourite parts being the rump, around the vent, and under the wings, while a destructive variety sometimes called ticks, are frequently found on the heads and necks of chickens a few hours after hatching.

While several varieties of lice live almost permanently on particular places of the fowl's body, there are one or two sorts of a wandering nature, and visit all parts alike, but are found more abundantly on the skin of the abdomen and amongst the fluffy feathers there.

They occasionally leave one fowl for another, can be found on the roosts at night, and have even been seen on the walls of badly infested poultry buildings and occasionally attach themselves to the person who may handle the fowls. Lice are by some supposed to suck the blood of their victims. This however, they do not do, but bite and chew the feathers and scales of the skin. They cause violent itching by biting, and must produce severe pain to the fowls when they are numerous, Anyone searching a fowl's hackle, prior to moulting, they will usually see small notches eaten out of the feathers, and frequently a large number of the hackle feathers have been eaten off close to the skin, all of which has been done by the lice during the period from the fowl's last moult.

All the lice breed rapidly, the eggs being laid upon the down of the feathers and they are said to hatch out in from eight to ten days, and immediately begin to crawl about and harsss the birds. These and other external parasites are usually found in dark, dirty, and ill-ventilated houses, damp also contributes to their propagation and flourish best on unhealthy fowls Every adult fowl is more or less lousy, some poultrymen say they keep their fowls free from tnem. This, no doubt is true, but this freedom is not so absolutely, as some of the vermin are so very small as to escape detection. At the same time, when they are kept in check to a moderate extent lice are not of such danger as the other external pests, and when the fowls are healthy, kept in clean houses and runs, and supplied with a dust bath, they will keep themselves comparatively free, and should under these conditions, one or two be found on the fowl's body such need cause no alarm.

Mites are the most dangerous of the external parasites, from the fact that they are blood suckers, and of the several varieties, what is known as the red mite is most to be dreaded. They live and breed in the cracks of the roosts and crevices in, under, and about any building convenient to the fowls, are most partial to the roosts, and are frequently found in masses under heaps of accumulated fowl droppings. Mites do not live on the fowls but visit them at night in myriads, and suck their blood.

They are of gray, brown, or dark color but when filled with the fowl's blood they become red. They are able to live a long time without food, and have been found in old poultry houses, twelve months after the fowls had been removed. It is to the sitting hens they do most harm, particularly in the hot summer months, this being one of the reasons why some poultrymen cease hatching in October. When the sitting hen has become infested they are literally in millions, and have been found in handsfull beneath the nesting material and eggs, the latter become spotted with the filth from them. and in pronounced instances the hen is a mass of living vermin. the head and eyes become covered with them, and she frequently dies through emaciation due to loss of blood.

In cases where the mites are not numerous enough to cause the hen's death or to be responsible for her abandoning her eggs, as soon as the chicks are hatched numbers of mites leave the hen and attach themselves to the chickens, swarming around their heads and eyes in myriads, and when examined are full of the young chicken's blood. In these instances, if the pest is not immediatly arrested it is responsible for the death of their perhaps but day-old hosts.

Fleas are perhaps the least dreaded enemy of the poultry yards, still they have been seen in hot sandy runs, houses and other places where the fowls frequent. Species of them feed upon the fowl's blood and precautions should be taken against them. The fowl flea, like the mite, is termed a partial parasite—that is, it goes only to its host to feed, and for this purpose has a sharp piercing mouth. From the fact that they only feed at night, they they are rarely noticed on the fowls,but they are the cause of much irritation and loss of blood.

The female flea lays her eggs amongst the dust and dirt and in the cracks of walls and roosts, and entomologists tell us that nits of the flea develop into small white maggots, and pass through several stages before they become true fleas. They breed all the year round, but mostly in warm weather.

All the lice breed rapidly. The eggs are laid upon the downey feathers and hatch in six or eight days. They live a considerable time, and can be kept alive on fresh feathers.

Mites, as has been said, are the worst form of external pests, but owing to their depredations being done at night, they are rarely noticed until they have become so numerous as to seriously affect the bird or they may be first discovered when a visit is paid to the broody hen to test her eggs, the vermin soon becoming apparent on the hands of the person handling her. When it has become known that there is an infestation, the first thing to do is to make a complete clearance of every internal fitting of the house—perches, boxes or aught else should be removed out of the poultry-yard and given a thorough painting with kerosene, and repeated the second day. The inside walls of the house should be given a good brushing down then a thorough painting with kerosene, to be followed with a coating of whitewash to which has been added, say 1 pint of crude carbolic to each gallon of the wash. Should the poultry-house be extensive and kerosene be considered too expensive, an emulsion of such will be effective. viz 1 gallon of kerosene, 1 of water, and 1 lb. of soap boiled together for about half an hour. One authority recommends for a wash for the house and fittings a decoction, made by boiling 4oz of tobacco in a gallon of water. The writer has tried this and found it most effective A generous application of crude carbolic is another excellent remedy. A cheap quality of this can be procured, and a good way to apply it is with a garden syringe which will drive it into every crevice of the house, and what runs down the walls on to the floor of the house will be equally useful there. A crude petroleum can also be had cheaply, and is as effective as the finest kerosene.

Lewis Wright on this subject says:—"The red mite lives mainly in the crevices of house and roosts, coming out at night to feed on the birds. It is naturally white but becomes red when fed with blood. The eggs are seen in crevices, especially where the ends of perches rest, as white dust. All should be removable, and the surfaces of such places washed daily with kerosene. This and frequent carbolic lime-washing and removal of manure will be effectual. The following is a cheap and easy method of preparing carbolic wash Boil half lb. of soft soap in 3 quarts of water. and while boiling hot agitate with it a quart of the crude carbolic acid. Keep this corked and labelled 'Poison;' when a wash is wanted mix a pint with a bucket of water, and syringe with it freely. Another wash quite as good is made by shaving up 1 lb. of yellow soap in 3 pints of boiling water, keeping hot till all is dissolved. Then remove from the fire to avoid danger, add 3 pints of kerosene and a gill of crude carbolic acid and agitate briskly for fifteen minutes, which will make a creamy emulsion When well emulsified add 12 quarts of weak soap solution and mix well. This is to be sprayed freely over the interior."

(To be continued).

Fattening Poultry,

Many people who keep poultry in the suburbs are in the habit of shutting up roosters, with the object of fattening them for table. The birds are fed usually on the everlasting maize or chick-wheat. They are often shut up for a month or six weeks, yet they obstinately refuse to get fat, and after a few weeks eat very sparingly, and instead of fattening they become thinner every day. The reason is that no bird can bear confinement and heavy feeding for more than three weeks. Then again the feeding is all wrong Maize or wheat will not achieve that object.Birds that are fattening should have very little grain food. If they are given boiled potatoes, pumpkins and other vegetables, mixed with boiled wheat or maize, and thickened with finely crushed grain as much as they will eat three times a day, with plenty of green stuff and a little meat or green cut bone together with grit you will see them grow and swell out. Some hold that penned cockerels should be fed frequently, but sparingly at a time during the day. Half fed fowls never pay. A fowl cannot get fat on a spare diet. To feed poultry requires judgment and constant attention and since these are far from being general attainments among poultry-men, in spite of the constant advice of the Poultry Expert to the Department, conditions in many cases remain unsatisfactory to themselves and disastrous to the fowls.

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The Orchard.

Gathering.

Simple as the gathering of fruit seems, it is nevertheless a very important operation, and one that it will pay the growers to attend to thoroughly, especially where the fruit has to be sent some distance to a market, or where it is intended for export or storing for our own local markets. Always gather the fruit carefully, bruising it as little as possible, as a bruised fruit is always a blemished fruit, which detracts from the appearance, and consequently, the selling value of the whole case ; and in the case of most varieties of fruit, bruising produces an early decay. Even where there is a market for the fruit as soon as it is gathered, handle it carefully ; and it will both look and sell better. Except in the case of early and some varieties of midseason apples, which can be gathered and marketed when only partially ripe, all apples should be allowed to remain on the trees till fully grown in order to develop their full flavour and quality, which will be matured by storing. Keeping varieties of apples, if gathered when immature, will always shrivel ; but early varieties, when left on the trees too long, will become dry and mealy. Actual experiance is the only means by which the grower can determine the exact time or stage at which to gather the fruit, as variety, soil, and climate have always to be taken into consideration ; but a good general rule to go by is—gather early fruit before thoroughly ripe or it will become mealy, but allow late varieties to become thoroughly developed or they will shrive and not mature their full flavour when stored.

Pears should be gathered as soon as they have lost their woody flavour and have developed sufficient sugar. They should never be allowed to soften on the tree ; if so, they will be either dry and mealy or rotten at the core, or botb. Peaches, plums, nectarines, etc, should he gsthered before they soften even for the local market, as they are so easily bruised. When required for shipping to other colonies, they should be gathered even sooner, and only the firmer varieties should be sent, but where required for drying, the fruit should be allowed to become quite ripe. The following which was written especiaily with regard to apricots opplies to peaches, prunes, plums end neetarines :—

The purpose to which the fruit is to be devoted determines the stage of ripeness at which it should be gathered. When required for drying it should be allowed to become thoroughly ripe, but not dead ripe or mushy, as then it will not keep its shape when cut, and if gathered too green the fruit will dry light and be acid as the sugar is not fully developed. For canning, the fruit must be gathered while still firm, just before the softening takes place, or it will not keep its shape whilst cooking, and for shipping long distances or for pulping it must be gathered even sooner In gathering the fruit do so carefully, and don't bruise it any more than you can help. Use step-ladders ; don't get into the tree if you can help it, as you will destroy numbers of fruit spurs along the main branches or just where the tree can bear most fruit without injury. Some California fruit-growers advocate shaking the fruit off into large sheets in a similar manner to prunes, but I don't like it, as it bruises the fruit too much ; for though it works well with prunes, which have a tough skin, it spoils other kinds of fruit. The expense of picking is made good by better market returns, When gathered for drying, the fruit sdould be carried in the picking-boxes direct to the cutting tables, so that there is as little handling as possible, and where the cannery is close to the orchard the same method should be adopted."

Thinning Apricots.

No fruit requires more careful thinning than the apricot, for if allowed to overbear—a very common occurrence in this State — the trees will produce a large number of small fruits which are nearly all stone, and which are of very little value ; whereas, had the same trees been properly thinned they would have produced fruit of good size, that would have been valuable for canning, drying, or selling fresh. There are two ways by which the fruit can be thinned, the first of which is to so prune the tree in such a manner that no more fruit-wood is left than is sufficient to produce the quantity of fruit that the tree is able to grow. The second is to thin by hand as soon as the last drop is over—that is, after the drop which occurs when the stone is forming, has taken place. Sometimes this drop is sufficient thinning in itself, in which case it is not necessary to thin further ; but if too large a quantity of fruit has set, then it must be thinned. No hard-and-fast rules can be laid down for thinning apricots, the quantity to be left depending on the soil, climate, and the vigour of the tree. In some cases at least three-quarters of the fruits left must be removed, and even then the tree will have as many fruits left as it can mature properly ; whereas in other cases only a very slight thinning or none at all, is necessary. The more vigorous the tree and the better the soil the more fruit it is able to mature. The fruit-grower must use his own judgment in the matter, and if he is an observant man he will soon learn how much fruit the tree is capable of producing properly, and when and how much a tree requires to be thinned.

In thinning, gather the fruit, don't knock it off with poles. Pull off all the smallest fruit, and thin evenly all over the tree, not all on one side and none on the other Thinning pays well, as 200 lb of good fruit on a tree will sell for more money than 500 lb of rubbish, which is hard to dispose of at any price. There is another great consideration in thinning the fruit, and that is that the strain on the tree's energies is very much lessened, and the plant-food removed from the soil by the crop is very much less, as it takes much more out of the land to form the stone than it does to form the fleshy part of the fruit, because the kernel of stone-fruits always makes a heavy call on the soil for phosphoric acid and nitrogen, the two principal plant-foods that have to be kept up in the soil by manuring. Thin a few trees to see whether it pays or not, and I have little doubt that you will continue to thin, as the increased size of the fruit renders it much easier to dispose of the fruit, and the extra price obtained wlil more than pay for the expense of thinning.

First Prize for Honey.—Writing on Nov. 8, the Commercial Agent reports :—At the present time we have a fine exhibit of honey at the Cookeries Exhibition at the Horticultural Hall, Westminster, and I am pleased to say that South Australian honey has received the highest award possible, and the silver medal (no gold ones given). This will materially essist us in bringing our honey before the public, as we shall take every opportunity now of advertising this fact.

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The Farm.

Conservation of Fodder.

Any vegetation that stock will eat in its natural state will make good ensilage, and it will be much improved by the operation, especially for cattle. It is said that cattle assimilate ensilage better than they do any other food, and the reason for that is that the change effected in the silo is nearly or quite that which is brought about in the first stomach of the ruminant animal. Barley and tares sown immediately after the first rains are very suitable and profitable for a first filling. These will be ready to put away in the silo (say) about the 1st of October, and the land can be at once ploughed and sown with maize, which will be fit for pitting about the end of Febauary. Fifty tons of fodder have been obtained in this way without irrigation, viz., from the two crops. Cockspurs, variegated and Scotch thistles, if put away in a succulent condition, can be taken out six months after in prime condition, and stock will devour them ravenously; in short, the silo has been styled 'the farmer's save-all'—nothing can come amiss to it. Mangold or turnip tops, cabbage leaves, surplus fodder of any kind, can be siloed and kept until periods of want Every few years we have seasons of plenty, when thousands of acres of the natural grasses might be mown and siloed for use in the years of famine.

The following is a crop-mixture that can be especially recommended for the preparation of silage for dairy cattle:—Half a bushel of horse-beans are mixed with one-third of a bushel of maize, and are sown or planted per acre, in rows 3 ft. to 3½ ft. apart. The method of cultivation to be followed is similar to that for the culture of fodder corn. When the corn reaches the glazing stage of growth, the product from 2 acres of the mixture (which being grown together is necessarily handled as one crop) is cut and put into the silo. together with the heads from half an acre of sunflowers. The sunflower heads may be reaped with a common sickle, carried to the cutting-box on a cart or waggon, and put through it, on and with the maize and horse beans.

Maize and all other crops intended for ensilage should be fully grown but still quite green and succulent. With oats and barley harvesting should commence when the ears are formed; maize when the cobs begin to glaze, and leguminous crops when the pods are formed. No more should be cut at a time than can be removed right away to the pit or stack before it begins to wither.

Silos may be pits dug wholly underground, constructions built either partly or entirely above the surface of the ground, or as is now very generally practised mere silo stacks put up like an ordinary rick of hay, and then pressed. In many cases some old barn or farm building is utilised and converted into a silo, with results equally satisfactory.

In the case of a specially-constructed silo it is desirable to have it as near as possible to the feeding-place. In the case of stack silos, on the other hand, it is often convenient to build them out in the field where the crop has been growing, so as to save the carting of bulky and loose material, and to feed the stock subsequently, either in close proximity to it, or else cart the silage to them in its more compressed form, at a time when both men and teams are generally less hard-worked on the farm.

A mere hole or pit dug in the ground is the simplest kind of silo known. These give good results when the soil is dry and sound. They consist simply of a pit, in which the maize, sorghum, tops of sugar-cane, or any sort of green fodder, is laid horizontally in the direction of the length of the pit.

The walls should be as near as possible perpendicular to ensure the better setting of the stored fodder, and when the level of the ground has been reached the green stuff is still heaped on regularly, and is gradually brought to a point. After having allowed the mass of fodder to subside somewhat for a day or two, it is covered up by means of shovels with a layer 20 inches thick of the loose excavated earth. The earth must be well trodden, more especially at the sides, where decomposition resulting from access of air is usually noticed in the silage The steady and continued compression brings on a corresponding subsidence and further shrinkage in the bulk; any cracks which may occur during that period are patched up directly they are observed. No other covering is required and the earth may be kept from contact with the green fodder by means of a thin layer of straw scattered over the surface.

When there is a rise in the ground and a cutting or trench can be economically dug by means of a plough, followed by an earth scoop, the waggons with their load of green stuff are driven along it, and their contents emptied as they move on; the trench being filled up in successive layers, which settle gradually under the trampling of the animals and the weight of the carts. A large quantity of fodder has thus been saved at a comparatively trifling cost, and has turned out as good silage as any made in more elaborate structures

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February Number of 1908

The Australian Gardener

(A Monthly Journal of Floriculture, Horticulture, Agriculture, and Poultry),

CONTAINS—

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Flower Garden—
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Dutch Bulbs.
The Forcing of Roses (concluded).
EDITORIAL.
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The Poultry Yard—
Diseases of Fowls.
A CANARY RECORD.
MUSHROOM CULTURE FOR AMATEURS.
INTERESTING TO SMOKERS,
&c , &c., &c.

Correspondents.

All Business Communications must be addressed to

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ADELAIDE.

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Contributors.

All letters, manuscripts, and matter intended for publication should be addressed to the Adelaide Office, corner of Pirie and Wyatt Streets, Adelaide, and in order to appear in the following issue should be posted to reach Adelaide by the 20th of the current month. It is necessary that correspondents should furnish their names and addresses.

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Particulars of rates will be snpplied on application.

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Subscribers are asked to notify the Adelaide Office if they do not receive their copy of the paper; also any alteration of address,

OUR issue of this month is just as complete in furnishing information in a pleasant way as any of our previous numbers,

Operations in the Vegetable Garden claim first attention. It is difficult to understand why everybody cannot grow their own vegetables. Too much trouble is the only answer, because nothing could be easier. And really, although a cabbage patch may seem to be a little below the dignity of an average flower gardener it is pure nonsense to think that there is anything undignified about growing cabbages and carrots and onions and so on. They are eaten readily enough by everybody, indeed in some of the outlying places the lack of vegetables is a matter of much concern from a health point of view. The homely and somewhat despised cabbage has been worth a golden sovereign many a time. It is a pity that people do not cultivate the taste for growing vegetables. It is just as interesting as growing anything else, and far more profitable than most things. There is no reason at all why a man, or woman for that matter, could not grow vegetables all the year round. It is a strange piece of ground that cannot be made to grow anything with the assistance of water, sunshine, and manure. The notes supplied in "THE AUSTRALIAN GARDENER" give all the necessary information.

In the Flower Garden division an article is devoted to "The Pentstemon." Attention is specially directed to this flower because of the way in which it is usually neglected. Some think this flower lacks in general appearance and is unattractive. So does any flower that is neglected. Pentstemons are amongst the freest aad best bloomers, and we lately saw in a private garden a collection of varieties that looked really charming in their prime colors and in their shades of coloring. The tints in some of the pink varieties were really exquisitely soft. They grow from slips or seeds without any trouble, and a careful selection will always give satisfactian

We are still continuing the article on the Forcing ef Roses, and a paper from "The Florists' Exchange" on Dutch Bulbs will be found full of that practical interest that always gathers around specialities. The monthly notes on the work of the flower garden gives all the requisite information for battling through summer. Some people think it hard work to grow flowers in summer. Everything is hard work that they do not like. And these good folk let their garden rest in winter. Others, again, are just the reverse. They prefer winter gardening. These fads ought not to exist in any properly and healthily constituted being. Flowers grow and bloom beautifully from January to December and so should the gardeners.

Grafting lemons and pruning citrus trees are chiefly dealt with in the Orchard. Very little understood, and very much debated, is the subject of pruning in citrus trees. A man must work out the theory and put it to practical test. It is useless to theorise about it without using the knife, for, after all, the knife is the true demonstrator of good or bad reasoning,

The Dairy receives the usual attention, and without attention nothing spells failure quicker.

Diseares of fowls occupies the space in the Poultry Yard.

Mushroom culture is treated upon for amateurs. Mushrooms are easy to grow if you go the right way about it, but not one in a hundred care for the trouble.

The Vegetable Garden.

HACKETT'S SELECTED SCOTCH KALE.

Operations for the Month.

All old vegetable remains, such as pea and bean haulm, cabbage stumps, rotting tomatoes, should be cleared out of the garden; indeed, such things should never be allowed to accumulate, for immediately the plants are past their useful stage they should be removed and other kinds of vegetables planted in their places, keeping the ground constantly cropped wherever practicable. Always follow one kind of vegetable with another of quite a distinct character, and where possible alternate a vegetable which is grown for its leaves or pods with another which is grown for its roots; for instance, a cabbage can be very well followed by red beet, carrots, turnips, potatoes, and so on; peas and beans can be followed by roots or by cabbage, cauliflower, etc. Where different kinds of diseases prevail to any extent, such as scab in potatoes or black spot disease in tomatoes, be sure not to grow such plants on the same ground next year, although other vegetables may be grown in the meantime, for the diseases remain in the ground in some cases, such as potato-scab disease, for years; and once they become established they are extremely difficult to eradicate. If a mulch of dung has been spread between and about vegetables, stir it up occasionally, and stir also the surface of the ground below it as well.

Beans of all sorts, except the Broad or Windsor bean, may be sown during the month as extensively as anyone may require. It is worth while trying several varieties, for there is a very great deal of difference in the quality of the various kinds, both runners and dwarfs. For general purposes the Canadian Wonder holds its own very well for quality as well as productiveness. The bean, although an excellent vegetable, should not be depended upon entirely. The greater variety of vegetables made use of, the better and more wholesome for those who make use of them. An overdose of beans is likely to cause indigestion to some persons.

Broccoli.—A little seed may be sown from time to time during the month. This vegetable is hardier than the cauliflower, which it resembles so much that the two can hardly be distinguished from one another by some persons It needs rich soil to enable it to grow to perfection. It should be grown as quickly as possible, and without a check from seed to flower. When the seedlings are 3 or 4 inches or so in height, they should be pricked out in a small bed by themselves a few inches apart, and allowed to grow into good strong little plants. Before they are very large, plant out in a heavily-manured bed—that is, if the ground is not rich enough without the manure; but it is only in very few places that, such as rich alluvial flats, where manure, in more or less quantity, will not be an improvement.

LONDON MARKET BRUSSELS SPROUTS.

Borecole or Kale.—This is very suitable for cool climates, and is worth growing. It belongs to the cabbage family, and needs the same treatment as broccoli, cauliflower, and cabbage. A little seed may be sown.

Cabbage.—This vegetable is, perhaps, more extensively grown than any other, and is in general favor. It can be cooked in various ways, and it is abused in the cooking as a rule probably more than anything else. When sometimes it might be made very palatable, it is cooked in such a manner as to be almost uneatable. Sow a little seed during the month, and treat as advised for broccoli. During the growth of any of the cabbage family, stir up the ground frequently between the plants; and even when the huge leaves overlap each other, it is possible to get a Dutch hoe underneath.

Cauliflower.—Obtain the best seed procurable and sow a little in seed-bed from time to time, shading and watering when necessary. After sowing vegetable seeds of any kind in a seed-bed, never allow the soil to become dry. Spread a mulch, and if necessary shade and water frequently.

Cucumber.—If any cucumber plants are required, seed may be sown, and the chances are, if the season is moist, the plants will soon come into bearing. Check the growth of runners by pinching before the runners extend overmuch.

Celery.—This should grow very well during the month, and be available in sufficient quantity for all requirements, that is, if there should be good rains. Under irrigation it can be grown to great perfection. Sow a little seed, prick out advanced seedlings, and when they are well grown, plant out on ground that has been well manured, Water the plants before and after planting. Celery plants that are nearly full-grown should be 'earthed' up If soil is used for the earthing up, take care that none of it falls in between the leaf stalks.

Cress and Mustard.—These deserve to be grown, for they are very useful for summer; but they will not succeed satisfactorily without a good deal of rain, or frequent supplies of water. The quicker the plants are grown, the more palatable they are likely to be. Sow seed occasionally during the month.

Egg Plant.—These should be bearing well in the early districts, where they are more at home than in cool places. They succeed best in humid climates. In early districts seed may be sown if plants are required.

SUGAR CORN.

Maize (Sweet or Sugar)—Plants should

be bearing ears sufficiently advanced for use in suitable districts.

Onion.—A little seed may be sown, but unless the seedlings are kept free from weeds when they come up, they are likely to be smothered. Seedlings can be raised in seed-bed and afterwards transplanted when they are strong enough. This is a good method to adopt, and will save a good deal of trouble. In early seeding, although the transplanting takes some little time to carry out.

GARLIC.

Parsley.—A little seed may be sown.

Potato.—A few rows may be planted, taking all possible trouble to select good seed, free from any signs of disease such as moth, sometimes known as 'potato fly,' eel worm, and scab. Discard all potatoes that are in any way defective. Use whole potatoes for seed of medium size. If it is necessary to cut potatoes into sets, select the largest potatoes for the purpose, making use of those of the most perfect shape. Plant in rows about 3 feet apart laying the potatoes 1 foot apart in the rows. Ths drills should be 5 to 6 inches in depth.

Pumpkins.—Seed may be sown if required, but by this time plants should be growing and bearing well so that further sowing may be unnecessary.

EARLY SCARLET WHITETIPPED TURNIP RADISH.

Radish.—Sow a little seed.

Spinach.—A little seed may be sown from time to time. This vegetable deserves to be grown, being useful for a change from those vegetables most commonly used.

COVENT GARDEN MARKET BEET.

Tomato.—According to Dr. Gordon Stables, R.N., "The tomato if just ripe and not too ripe is perhaps the most health-giving food in the kingdom." Therefore, taking this into consideration, no one could go wrong in planting and using this vegetable extensively. A few seeds may be sown and seedlings planted out in order to keep a supply of fruit going as long as possible. Train to one stem, as such system of training is the very best to carry out. Nothing is more offensive than a mass of rotting tomatoes in a garden where the plants have not been trained in any way, and probably nothing is more likely to increase tomato diseases. There is but little trouble in training tomato plants as they should be trained. Stakes must be provided, and as the plants grow they must be tied to the stakes, removing all side shoots as soon after they appear as possible. The leaves will spread out well, giving a quite handsome appearance to the plants, and fruit will grow in quantity along the stems.

Turnip.—Sow a little seed in drills from time to time.

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To Correspondents.

H.B.—If the trees are in good growing condition, fumigating or spraying may be safely carried on this month, but where orange or lemon trees are suffering from the effects of want of moisture, they must not be treated on any consideration, as either spraying or fumigating would under such conditions be harmful to the trees. The lower the temperature the better will the trees stand either of these processes; therefore never treat trees on a hot day; in fact, during this month fumigating gives the best results if carried on at night. When it is found necessary, trees may be sprayed with Bordeaux mixture after fumigating, but under no circumstances must a tree be fumigated after it is sprayed with that mixture.

"DAIRYMAN" asks for information about cow peas. Our answer is to go to a reliable seed merchant and he will tell you that they grow in summer under irrigation. But he may not know what Mr Grantham, of Missouri, remarked a report. He said that as much forage can be produced from this crop in 80 days as red clover will yield in 15 months.

"DUTCHY" wishes to know whether it is right to take up bulbs every year. It depends a good deal upon what you do with them and the ground you take them from. Most bulb growers take them up every second or third year. Some people never take them up and succeed in getting good flowers for years.

"H."—The name of the flower is Agapanthus. These bulbs are growing in favor for summer gardening. They are very beautiful and the separate flowers of the crown make nice buttonholes with a little fern. They come from the Cape.

"ASPARAGUS."—No, it is not a fern at all, although many people ignorantly talk about asparagus ferns. It is one of the same family as the common eatable asparagus that you see in little bundles in shop windows.

"VERANDAH POT."—The large foliage leaves often seen on verandah's described in your question are evidently Aspidistra. Very easily grown. Borrow a single root from a friend, put in a pot and in a very short time you you will be able to return it with interest and have plenty for yourself.

TO DESTROY RATS.—A correspondent writes:—Take slacked lime and alum and put the mixture under or on the benches, around poultry yards or greenhouses, and you will get rid of all rats. I had them so bad that they destroyed my geraniums and carnations. The rat is very fond of water, and when it goes along on this preparation it gets its claws full, rubs its nose, then runs for water; and as soon as it gets water the animal is destroyed. For ants and slugs, the mixture cannot be beaten by anything on the market. I have nine green-houses, and have not a lug or ant in the place.

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The Flower Garden.

The Pentstemon.

[By J. Cronin.]

The garden varieties of the pentstemon are valuable plants for flower beds and borders, as they grow freely with a moderate supply of moisture and plant food and bloom for several months of the year. The natural habitat of the genus is Central America, most of the species being natives of Mexico and California. The plants are of perennial herbaceous habit of growth, and during the growing season freely produce shoots that bear spike-like bunches of long tubular flowers of varied and bright colors. The original species are rarely cultivated now, the hybrid varieties being greatly superior in every way. A species occasionally seen in nursery and special herbaceous collections is P. azurea, the flowers of which, though small and few in comparison with the best hybrids, are of a beautiful shade of blue. This color is absent in the garden varieties, and its introduction would add greatly to the value of the pentstemon. A number of new and improved varieties have been raised during the last few years. An Australian hybridist, Mr. G. H. Kerslake, of Sydney, has contributed several that are said to be a distinct advance on any that have been imported. The flowers are not difficult to cross-fertilise, and as the plants are easily raised from seeds and bloom early we may expect to see a greater advance in the near future, possibly—as has occurred with the chrysanthemum, dahlia, and other garden flowers—an Australian type of this plant.

PENTSTEMON.

One of the principal factors in the value of the pentstemon as a plant suitable for general border culture is its extreme hardiness, the plants enduring a deal of drought and neglect without perishing. The blooms are produced freely during the hot summer months and with a little attention a good display is assured. The pentstemon is not a popular plant with florists who grow flowers for sale, for although the flowers last well when on the plants and are freely produced they are not lasting when cut in hot weather.

Soil and Culture.

Although the pentstemons will grow and thrive fairly in almost any garden soil they succeed best in a light loam that is well drained. The most common causes of failure are to plant them in wet sour soil, or within the excessive shade and soil starving influences of large trees. When planted in a fairly friable soil that has been moderately manured they will resist conditions severe enough to destroy many other garden plants. In very dry situations the plants generally grown in mixed borders will benefit largely by the addition of two or three inches of stable manure spread over the surface of the bed as a mulch; under such conditions the penstemon will thrive. Mulching should be applied while the soil is in a moist condition in spring.

The pentstemon is propagated from cuttings, divisions and seeds. Cuttings taken in autumn from the shoots that occur on the stems root readily in sandy soil in a cool frame or sheltered situation. The young plants should be transferred to their flowering quarters early in spring. Old plants may be divided in autumn and replanted where they are to grow. Seeds should be sown in early autumn or spring in light soil. They may be sown in boxes

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or pots or in a specially prepared patch of light well-tilled soil. When the young plants are large enough to handle they should be potted or grown on in boxes until strong enough to plant in the borders Snails and slugs should be prevented from attacking the young plants. Seeds can be obtained from the various seedsmen or the grower can save his or her own; the finest varieties only should be selected to save seeds from and the flowers should be fertilized. Any indifferent varieties, especially those bearing purplish-colored flowers, should be cut down before the process of cross-fertilising is started.

A number of varieties of pentstemons are catalogued by nurserymen. The following are a few of the best:—Alba, White Beauty, Perle, Stanstead Rival, Georges Sand, Sculpteur Bartholdi, Bertha Koch, Cratere, Kamm, Neron, Jupiter, Diana, Emblem, Gaulois, Lamartine.

Notes for the Month.

The importance of a proper preparation of the soil prior to planting is apparent at this season of the year. In gardens where the beds and borders have been deeply worked, drained, and manured, the plants generally grow satisfactorily without watering, while in poor and shallow soils frequent soakings of water are necessary to keep them alive, although the natural conditions are practically identical. The most important work at present is the maintenance of coolness and moisture in the soil, combined with healthy foliage on the plants. Water, mulching, and cultivating are means to promote the former, while materially assisting the latter.

PHLOX DRUMMONDI GRANDIFLORA.

A number of pests ravage plants of various classes during summer; among the worst is red spider, which is most destructive in its effect on dahlias, roses, and other genera. The attacks of red spider can be prevented in a measure by the removal and destruction of badly infested subjects, such as pansies that have produced their best flowers, and by exercising discretion in planting or sowing seeds of plants of minor value that are liable to be attacked, in proximity to the more important plants. Red spider is one of the most difficult garden pests to exterminate when established, especially in dry districts where the soil is of a sandy nature and is almost certain to infest French beans, peas, and many other plants that have reached maturity. The leaves of gladioli are also hosts for this pest, especially when ripening, and should be sprayed with a strong soap solution or cut away and burned. Plants allowed to become dry at the roots are very liable to attack. Caterpillars of various moths also attack the foliage and flowers of several important garden plants, in many cases damaging the foliage extensively before it is unfolded. When the leaves at the growing point are 'rolled' by the caterpillars the only means to destroy them is to pinch the shoots. Spraying the plants with Paris Green mixed with lime water at the rate of 1 oz. to 10 gallons will destroy any caterpillars feeding on the surfaces of the sprayed plants. Unslaked lime only should be used in preparing the lime water, from ½ lb. to 1 lb. being sufficient for 10 gallons. The mixture should be constantly agitated, while being applied in the form of a light mist-like spray, which should reach all parts of the plant to be thoroughly effective.

Cannas, perennial phloxes, and other herbaceous genera will require to be watered during dry weather to bring the flowers to perfection. Where the soil has been mulched one good watering is generally sufficient, and in any case sufficient should be applied to saturate the area occupied by the roots. Plants clothed with dust should receive a sprinkling overhead to cleanse them. Evening is the proper time for the application, as light overhead sprinklings in hot sunshine are likely to injure delicate foliage.

Annuals that have finished blooming should be removed and the soil prepared for other plants to fill the vacancies, observing rotation as far as possible. Winter and spring flowering bulbs are a good succession to annuals, such as stocks, phlox Drummondi, and others.

During the month seeds of a number of annuals and perennial plants may be sown for transplanting in autumn. In any garden, a portion, even if small, should be reserved as a nursery for raising plants from seeds and cuttings. The important considerations are shelter and a supply of water. In a very limited nursery a quantity of plants can be raised annually if a frame or screen over beds or boxes for raising the plants is provided. The main advantage of sowing seeds in summer is that the plants are ready to set out early in autumn, and make considerable progress before the cold weather sets in. Pansies and Iceland poppies for

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example raised early commence to bloom in July and develop into strong plants that will continue to flower well with a little attention until Christmas. In the dry and warm parts of the State they are generally pest-ridden, and it is better to destroy than to attempt to clean them. The soil for seed beds and boxes should be light and porous, and should be firmly pressed or trodden and levelled before sowing the seeds, which should be done thinly and evenly. The seeds should be covered with sifted soil and the surface gently watered. The young plants appear during the hottest part of the year, and will require to be shaded during hot sunshine and watered regularly to survive, it being necessary to water two or three times a day during dry and very hot weather.

The growing shoots of chrysanthemums should be carefully watched at present to prevent caterpillars damaging them. The growths need regular examination and should be tied to stakes as they develop, all lateral shoots should be removed. Carnation plants may be layered, by which means a stock of young plants may be available for planting shortly. The shoots should be 'tongued' on the under side, fixed firmly, and covered with light soil (sandy, if possible) after the reception of the cut portion of the shoot. The layers will need an occasional watering during dry waether. This method of propagation is practised by nurserymen for increasing shrubs that fail to strike readily from cuttings. It is a method by which the amateur gardener may increase many plants, otherwise difficult to propagate, without much trouble. Daphne, eriostemon, and other shrubs are commonly increased by this means, and the principle can be applied to a number of the shy-rooting kinds.

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Dutch Bulbs.

[By A. Henderson, in "The Florists' Exchange."

The propagation of the bulbs is an important and interesting subject, both for the horticulturist and the botanist; and the history of the mode in which these plants are reproduced is perhaps the most delightful phase of their life story.

They may be multiplied by seed, but this is for the most part a long and tedious process, and usually only employed in the case of raising hybrids. Too many years elapse before the bulb is mature enough for flowering and the patience of the cultivator becomes consequently exhausted. The hyacinth, for instance, demands a youthful immature career of some five or six years before it can feel energy and power and ripeness enough to throw up a flowering spike, and when considering that this bulb if found worthy to be grown, requires twelve to fifteen or twenty years of careful artificial propagation before a moderate stock can be had it is therefore necessary for some other method to be used in increasing the stock.

The method of propagating the hyacinth used to consist of making two or three cuts across the base of the bulb after removal from the ground. When placed on the shelf to dry, it was not long before numbers of tiny young bulbs were formed at the margin of each slit. This, however, did not give the desired number of offsets and a new method has been discovered which is in general use. As soon as dug the bulbs are taken and the base scooped out so that a large dowl-like cavity is formed, lined with the transverse surfaces of the fleshy scales. The bulbs are then put out in the field and covered with sand and left there for fourteen days (this heals up the bulb where it has been cut), after which they are taken into a shed and spread on a rack. After several days it will be found that at the surfaces of the scales inside the cavity have formed a large number of young bulbs of very small size, representing so many individual plants. These are allowed to remain there until the tissues of the parent bulb have all dried out and are then detached and sown out in the open ground It will take six years to grow a full sized hyacinth from such a bulblet.

Tulips and narcissus are propagated from offsets which form the base of the parent bulb, the strongest bulbs being grown on in order to raise these offsets and are called "mother bulbs." The mother bulbs in the case of the tulip are planted separate and will produce the following season eight or nine bulbs or bulblets, according to how prolific a variety it is. The mother bulb itself disappears, as the tulip is like the gladiolus inasmuch as the bulb that produces the flower dies and a new bulb forms in its place, all that is left of the old bulb being the dry scales. Bulbs received here are usually in third year. The narcissus is also propagated from offsets, but the old bulb does not die as in the case of the tulip, although it will sometimes break

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up into offsets altogether and in this way become lost.

Outdoor planting ot Dutch bulbs in America is increasing every year and they certainly deserve to be more liberally planted still.

Where beds are to be solidly planted with spring flowering bulbs, the soil should be well prepared in the first place A rich, sandy loam is undoubtedly preferable, but perhaps the most essential part of all is that the beds have perfect drainage, so that there will be no danger of water standing during the winter to rot or weaken many of the bulbs. The soil should if not naturally sandy, have a good coating of sand and should be dug to a depth of at least fifteen inches. Well rotted cow manure is the best fertilizer that can be used, but a liberal sprinkling of fine ground bone will also be beneficial. The beds are better if raised a few inches higher then the surrounding ground. The depth at which bulbs should be planted depends mainly on the variety, but a simple method is to put the bulbs down at least twice their own depth.

In the hardy border, bulbs may be planted to great advantage in patches among the hardy plants. They will not only look well and make the border look showy from earliest Spring, but they have a thorough chance of ripening the bulbs and need not be disturbed from year to year for this purpose. I would recommend especially the late flowering class of tulips such as Gesneriana, Bouton d'Or and the Darwin class.

There is another plan of planting spring flowering bulbs, which, to the lover of natural effect, is perhaps the most pleasing. This is planting in the lawn or in semi-wild places. In many places no better effect can be gained than from large patches of narcissus above the green sward In a closely kept lawm only such small and early flowering varieties as crocuses and scillas may be planted, but what can be more pleasing in a semi-wild place than patches of the different narcissus and in shady places the erythroniums, trilliums, etc ? When this style of planting is adopted each variety or color should be in large patches, if space will permit the larger the better. Nature always plants in this way.

For planting outside or inside I would always recommend the use of named hyacinths and only single varieties. For the best list of named hyacinths I cannot do better than give the following :—

Charles Dickens, beautiful pink, fine formed large spike, one of the finest pink hyacinths.

British Queen, pure white, grand spike.

King of the Blues, deep glossey blue, large compact spike, the finest dark blue hyacinth in cultivation.

The following are among what I would consider the best early tulips for bedding:

Artus, scarlet with yellow base.

Belle Allirnce, beautiful pure scarlet.

Cottage Maid, rose pink shaded white.

In addition to the forgeoing we must not forget the late flowering, which are thought by many to be the finest tulips of all; they are certainly being more freely planted as their merits become better known, but there is still room for improvement. The following are among the best :—

Major, scarlet with blueish black base.

Golden Crown, yellow streaked red.

Picotee or Maiden's Blush, white margined rose.

I must also say an especial wor for the Darwins. These I consider the finest of the late-flowering class. Their stems are long and stiff, often two and one-half feet high in good garden soil Once planted in a favourable location they will come up each year for four or five years. Of these the named sorts are still rather expensive, but the following can be had at reasonable prices and are certainly worth growing ; Glow, Gretchen, Salmon King, White Queen, Clara Butt.

Parrot tulips are also to be mentioned in the late flowering class of tulips, and while some objection to them may be raised on account of the stem being too weak to hold the flower erect, still their peculiarly toothed petals and brillant combinations in colorings make a welcome addition to the late spring flowers

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Yellow trumpets, Glory of Leyden, Emperor, Henry Irving, Golden Spur, Victoria, Empress White Trumpets.

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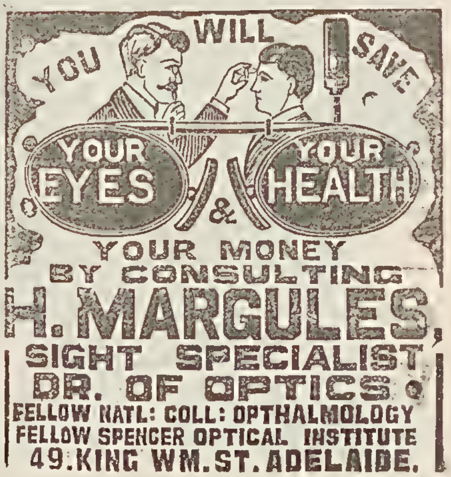

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The Forcing of Roses.

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In nearly all cases where raised beds are used, it is customary to throw out the plants after cropping them for one season, but if they have been planted late and have not been forced, some of the smaller sorts may be dried off and rested, and after a few weeks taken up, placed in small pots and kept in a shaded place until the roots have filled the pots, when they may be repotted, or at once planted out in fresh soil upon the beds. As a rule, it will be better to replant with well-grown young plants.

When grown in solid beds, the same result is secured without taking them from the bed. The plants are dried off, so that they will rest, but not enough so that they will shrivel, and kept in this condition for six weeks or two months. The small wood should then be cut out, and the remaining branches headed back. A little of the surface soil can then be removed, if it can be done without disturbing the roots, and a rich mulch applied to the bed. Water should then be applied, but rather sparingly at first, so as to avoid saturating the soil before the growth has started. If properly handled, a heavy cut should be secured, and the results for the season will oftentimes be as great as could be obtained from new plants, while there will be quite a saving in the expense for the plants and for renewing the soil. Some of the most successful growers make a practice of carrying over about one-half of the plants each year.

If they are to be replaced, as soon as they are past the period of profitable flowering, or when the beds are needed for replanting, the plants should be removed and burned and the soil taken from the table. The benches should at once be repaired and made ready for new plants. It is well to paint all the woodwork of the benches and walls each year with a hot wash composed of equal parts of lime and cement, to which a small quantity of salt has been added. This can be applied rapidly with a whitewash brush, and will help to preserve the lumber and destroy insects, besides improving the interior ot the house. If the plants have been troubled with fungi and insects, it will be well to burn a small quantity of sulphur, but it should not be done while there are plants in the adjoining houses, as it will prove fbtal to them as well as to the insects and the germs of the diseases. Nearly as good results can be obtained, however, without injury to the plants if the sulphur is slowly evaporated over an oil stove.

When the plants have been in the beds for six weeks or two months, the growth will generally be sufficient to require staking, Most growers still tie with raffia to stakes of wood or bamboo and by an occasional re-tying keep the shoots in place. The use of wire is, however, becoming quite common, and rose growers have devised a variety of trellises for the purpose. One of the simplest of these consists of a No. 12 wire stretched about three feet above the bed over each row of plants to support stakes of No. 6 or No. 8 wire, to which the plants can be tied. Sometimes another wire is run lengthwise of the house along each row of plants, near the soil, and a smaller wire, fastened to this at the bottom and to the other wire at the top, can be used as a support for each plant. Still a third method is to run about three wires (No. 12 galvanized) lengthwise of each row and one above the other at intervals of about one foot, the lower wire being about the same distance from the soil. The wires will need to be stretched and fastened at each end to a gas pipe framework, and supported at intervals of twenty-five feet with a lighter framework.

Although there is considerable expense at first for the wires, it will be found very satisfactory, and in the end perhaps less expensive than any of the old methods. If desired, it will be a simple matter to so arrange the long wires that, when refilling the beds, they can be drawn up out of the way.

The care required in forcing hybrid perpetual roses is different than for teas and for most hybrid teas, as the plants make thtir growth and have a period of rest before flowering. They are generally grown in solid beds, but sometimes boxes or pots are used When grown in beds they should have thorough drainage with tiles. stones, or broken brick, arranged in the same way as described for tea roses, and provided with eight or nine inches of rich compost. Although cuttings are often used, the largest blooms can be obtained when they are either budded, or grafted, upon Manetti stocks.

The plants should be set early. They should be ripened off by gradually withholding water, and only giving them enough to keep the plants from wilting and shrivelling. By syringing morning and evening, the plants can often be kept from wilting without wetting the soil. During rains the beds should be kept dry, as, if the soil becomes saturated, rest will be prevented and the crop will be a failure. If in pots or boxes, they should be turned upon their sides during rains. From four to six weeks will generally be rest enough, and when growth has stopped and the shoots have taken on a lighter color, they should be pruned, removing the weak shoots and cutting the strong ones back to sound wood and plump buds. After a few a few days, scrape off the top soil and replace with a fresh compost of equal parts of rotten sods and cow manure. Water thoroughly, and repeat when the soil becomes dry, Syringe every pleasant

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morning and give thorough ventilation, keeping the house at forty-zeven to fifty degrees at night until the buds start. The temperature can then be raised at the rate of one or two degrees a week, with less ventilation after the leaves show. By the time the flower buds appear it should have reached fifty-four degrees, and should then be raised to fifty-five or fifty six degcees, at which temperature the house should be kept until the plants are through flowering. Ventilate at sixty-two to sixty-five in the morning, but let the temperature run up to seventy five deg. at noon After the buds appear, the beds should be given a watering with liquid manure once or twice a week. The later sorts can best be grown in pots or boxes, as they can then be left outside until the weather becomes severe, when they should be placed in a cool greenhouse and brought into heat as desired.

Roses in pots and boxes, if only a few plants are used for forcing, may be grown in nine-inch pots, or in long boxes six inches wide and about the same depth. This method is particularly desirable for hybrid perpetuals. The small plants should be grown the same as for the beds. The tea roses will do best if kept growing in the house, although some florists think it well to harden them by placing them out of doors when they are in eight or nine inch pots, and plunging them to their rims in sand or coal ashes, the same as should be done with the hybrids. They will need frequent syringing, but care should be taken not to give enough water to the soil to admit of their becoming water-soaked.

The hybrids should be dried off, and will need the same attention as those in solid benches, until the wood becomes hard, when they should be pruned, and after being first placed in a cold frame, shonld be gradually brought in to heat.

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Grafting Lemons.

The following report as to whether Washington naval orange shoots could be grafted on lemon stocks has been prepared by Mr. G. Quinn, Chief Inspector of Fruit, under instructions from Hon. L. O'Loughlin, Minister of Agriculture:—

I have the honor to state that this operation may be done successfully, and does not involve more than the ordinary skill required in grafting other fruit trees. The plan I would suggest following is to cut off the lemon tree about ground level or an inch or so lower, and insert between the sap layer and the bark, by what is known as 'bark' or 'rind' grafting, scions which would be in number according to the diameter of the stock, the scions being no nearer than about 4 in. from each other, as measured around the outer bark of the stock. The best wood for this purpose is found among the nicely ripened shoots of a thickness of about three-sixteenths of an inch, and on which the buds are yet dormant Scions about 4 in. in length are sufficient. Scions are cut in the usual way, so that they may be forced down into position between the bark and wood layers. The wounded portion of the stock and the terminal end of the scion should be covered with grafting wax or good clay, and a substantial tie of strong string should be bound around the stock and drawn sufficiently tight to press the bark against the scions, and the scions, in turn, against the sap layers of the stock. Finally, broken earth or sand should then be carefully heaped up over the stock and the scions until the whole lot are enveloped in a mound, and no portion of the scions or stock visible. If a bell jar or large flower pot can be placed over the top of this the chances of the scions uniting are improved.

As the scions begin to send up shoots these coverings or jars should then be removed. The best time to perform this grafting work is in the early spring, but as the sap of the citrus trees is flowing pretty freely at any time in the summer where they are grown under irrigation, it is a simple matter to perform the grafting during the summer-time, providing the necessary shade and shelter can be obtained. Another method consists of inserting buds of the orange into the older limbs of the lemon tree, not far above where they emerge from the trunk The common T bud is used, and the wounded sections should then be covered up with grafting wax, and then bound with ordinary binding string, or by binding up with waxed cloth, sufficiently strong to draw the wound together. The tops are not cut off the lemon trees until the buds have united with the stock. When this has taken place the limb in each case may be covered an inch or two above the inserted bud, and then the whole of the trunk and the stumps of the limbs which remain are covered over with a coat of

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thick whitewash to protect them from the sun. The trees should be, of course, well supplied with moisture during the operation, which may be performed at any time during the summer while the sap is actively flowing. Of the two methods grafting would probably yield the best results, as many of the lemon trees have been originally budded on seedling orange stocks, and by thus grafting low down the naval orange tissues would find a closer relationship botanically, which is always desirable in these operations.

Pruning Citrus Trees.

The Orange.—If the orange makes a good growth in the nursery its pruning should be commenced there, as it should be topped at a height of from 2 feet to 30 inches, which will cause branches to be thrown out, of which three evenly balanced round the stem should be chosen to form the future head—the rest being removed. Previous to transplanting, these three branches should also be pinched back, so as to harden them off as much as possible, in order that the young tree may be better able to stand the shock of transplanting. Should, however, the tree not have made good growth in the nursery, its cutting back should be deferred until it is planted out, when it should be cut back and treated in a similar manner to that of the stronger tree in nursery, just described. Do not remove the leaves from the main stem of the young tree when planting out, unless a shelter of bark or other material is provided, as they tend to protect the bark from sunburn until such time as the top shades its own trunk. Having given the young tree the necessary shape for a start, the subsequent pruning is very simple, and consists in the removal of water sprouts and other superfluous branches and a shortening in of excessive or straggling growths—taking care, at the same time, to keep the head moderately open, but not so open as to allow the sun to shine directly on the trunk or main branches of the tree. All branches growing from the under side of the main limbs which would have a tendency to grow to or near the ground should be cut off—but beyond that and the necessary pruning just mentioned, the less the knife is used on an orange-tree the better. It is never advisable to prune a citrus tree during the winter, as it exposes it to the cold winds and sometimes frosts, both of which are very injurious to its growth and tend to stunt it. Always try to prune just before a growth, and if any rough cuts are made, trim them off smoothly with the chisel and paint with Stockholm tar—apply with a brush. The pruning of older trees consists mainly in the removal of dead, broken, or superfluous branches, and keeping the head well thinned out. By this means the trees will be kept in good health, and will produce a fair amount of new wood annually, on which the succeeding season's crop of fruit will be borne, as the orange bears its fruit on one-year wood only.

The Lemon.—The pruning of the lemon in nursery, and also when first planted out, is similar to that of the orange, just described. But as the lemon is often a very rank and straggling grower, it is necessary to cut back all straggling and excessive growths in order to keep the tree symmetrical, and to prevent its breaking apart from the weight of its fruit. If unpruned, the bulk of the fruit is borne on the extremities of the branches, whereas if the straggling growths are checked they will throw out laterals, and the fruit will be borne more in the centre of the tree. Straggling growths growing on to or near the ground should also be removed, as the fruit growing on them is of little value, and they give the tree a very untidy appearance. When removing a large limb always be careful to make a clean cut, and to trim the edges with a sharp knife, covering the whole of the cut with grafting-wax, rubber paint, or Stockholm tar. If this is neglected, the wound is very apt to sour and produce the much dreaded bark or collar rot, which, if unattended to, will in a short time destroy the tree.

The Mandarin.—The pruning of the different kinds of mandarins is at first similar to that of the orange, and in the case of the Emperor and Canton varieties, the subsequent treatment is very similar; but in that of the thorny mandarin it is necessary to prune much more extensively, as the tree is naturally such a compact grower that, in order to produce annual crops of good fruit, it requires a vigorous system of thinning out, so as to produce the necessary new wood on which to grow the succeeding season's crop of fruit. As a general rule, the thorny mandarin only bears a crop of fruit every other year, and then it overbears, the trees in many cases being literally covered with fruit, generally of a small size. The following season there is no crop, as the production of this heavy crop has exhausted the energy of the tree, and no new wood has been produced—so that it takes the trees a year to recuperate and grow new wood for the next crops. If, however, the trees are thoroughly pruned, instead of having a very heavy crop of undersized fruit one year and none the next, regular crops of larger fruit will be grown, which will more than pay for the extra trouble and expense of thorough and careful pruning.

A Remedy for Snails and Worms.—Thoroughly mix one peck of wheat bran with one tablespoonful of Paris Green, then add a quart of strong molasses. Rub all the ingredients together thoroughly until the mass becomes of the same consistency throughout and crumbles easily. Scatter lightly among the plants where the worms are feeding and you will have no further trouble there. This remedy also destroys snails, bugs, etc.; it never fails and is the simplest remedy we have ever tried for this class of insects. We pity the man who stays upnights to pick these insects by hand.

Another Record Broken.—It is not long since that Mr. G. Burton was considered to have brought in the heaviest load of wheat delivered in Jamestown, when he brought in 50 bags which contained 232 bushels 16 lb. (says the 'Agriculturist and Review.') Soon after this, however, Mr. W. Pollard delivered a splendid sample of 'Federation' wheat that weighed 171½ bushels for 37 bags, sold to Mr. McNaughton, Jas. Bell & Co.'s local representative. But on Thursday last Mr. W. Williams delivered to Mr. W. E. Sandland (local buyer for Dalgety and Co. Ltd) a load of 50 bags that weighed 251 bushels 33 lbs. Needless to say the sample was a very fine one, and when it is understood that each bag had to average 302 lbs. it is pardonable to feel thankful that there are other means of livelihood than staggering under the weight of some seventh-of-a-ton of golden grain.

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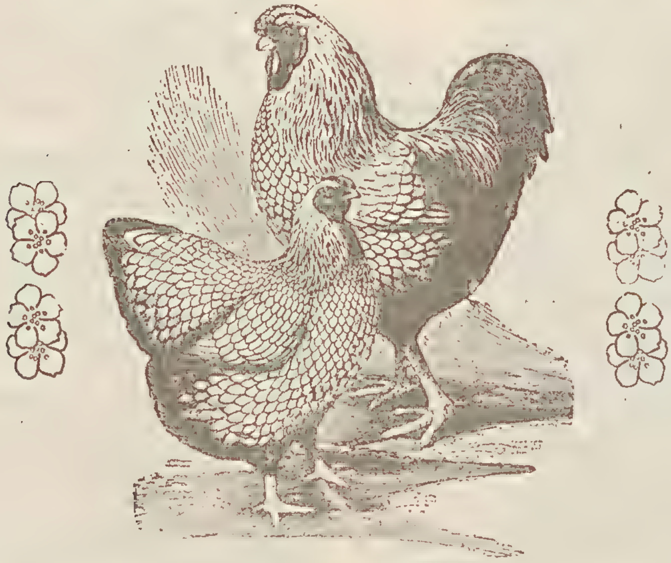

Diseases of Fowls.

(Continued from last issue).

Any of the above mixtures will be effective in abolishing the mites, but one of them must be occasionlly used to keep the places clean; this, however, can be easily done. Perhaps the simplest of any for the perches is to give them a painting once a month with a cheap liquid known as coal-oil. At the late Rockdale egg laying competitions this was used occasionally, the supervisor attributing the cleanness of the fowls throughout the two years' tests to this simple preventive. The above remedies apply to the vermin mites and fleas only. These visit the fowls for their food but do not live on them.

Lice are of less consequence, but dangerous withal. A vermin infested hen will not lay well, and, it has been said, will not hatch well, frequently leaving the nest before the eggs are due, and what is nearly as bad, should she hatch them lice are immediately transmitted to the chickens, many of them dying from the effects. Lice are more easily exterminated than the mites, a few dustings with one of the many insect powders being effective. Pyrethrum powder is the best, and it is said this forms the basis of many of the insecticides. Tobacco dust, which can be had for as low as 3d.per pound,is also very effective, and a handful of this placed in the setting hen's nest, and another handful added when within a week of bringing out her chicks will keep her free from these irritating pests. Another good dusting powder is 1 oz. of 90 per cent. carbolic acid to a peck of fresh air-slaked lime,and stir thoroughly. In using dusting powders,the simplest way is to spread out a newspaper; hold the hen by her legs, with the body and head hanging down; the powder can then be worked into the feathers down to the skin. The struggling of the hen will assist in working in the powder,and what falls on to the paper can be used again. Indeed,to be effectual, there should be two or three dustings at intervals of a week.

If the fowls are healthy, the premises kept clean, and a dust bath of ashes provided, lice rarely get the upper hand, it being through the brood hens transmitting them to the chickens that most harm ensues. A hen with many or few lice on her when sitting transmits them to the chickens immediately they are hatched and remarkable to tell,they do not wander over the chickens body,as on the hen, but are to be found stationary on the chickens' head,above the beak and eyes, and in a few days, when they get more plentiful, are to be found behind and on top of the head and throat They are difficult to find,the best plan being to take the small blade of a pocket knife,and separate the fluff or small feathers at the top of the head or near the beak, and they will be found deposited there, frequently with their heads buried into the skin; such an unusual thing for lice, that they have been termed chicken ticks. Mr.E.Cobb.F.Z.S,, for a long time on the staff of the Feathered World,England,in his book on the rearing of chickens, says :—"This insect, which we have failed to discover a mention of in any work on poultry,somewhat resembles the sheep tick, a by no means unfamiliar object amongst sheep-breeders. Its habits are also very similar to its more developed cousin,for in each case does it bury its head into the flesh of the animal or fowl, and in pulling it away the body will at times separate and leave the head still embedded in the flesh. When taking some off in order to examine them while still alive, the chick has often called out in evident pain. They suck the very life blood from the youngsters, and we have no hesitation in saying that the primary cause of nine out of every ten deaths in young chicks is caused by these ticks. For it can readily be understood that if the chick is infested with a number of these insects, all living by the suction of its blood, its system is lowered and its blood is poor, and that the first chance it has of taking roup or other disease will not be missed, and being almost exhausted by its previous troubles it quickly succumbs, and the real cause of its dying is often lost sight of. In the first place ticks, unless in very great numbers,are exceedingly hard to find. We mention this to show how careful one must be in order to detect them, and that if one in a brood is discovered with any, it may be taken for granted all the rest have some. Ticks generally make their appearance when chickens are from one to three weeks old, and they collect only on the head, neck, and throat of the bird. The hatching ground for ticks is on the front of the head, close to the base of the upper mandible of the beak; there the eggs will be found deposited, being of a whitish color, and much longer than they are broad, When the tick hatches it removes toward the back of the head, and as it increases in size goes down the neck and under the throat,and the largest and most developed ones will usually be found at the base of the ear. Insect powder we have found to have little or no effect in killing ticks. Salad oil, or any other oil, will kill the ticks but does not destroy the eggs. Paraffin will not only kill the ticks and eggs but the little chicks as well. The following is a simple recipe and will be found effective in destroying the eggs: Take three-quarters of a cup of water and when boiling pour in a quarter of a cup of paraffin, stir well together, and let it boil for 2 or 3 minutes; remove to cool somewhat, and continue to stir whilst applying it to the chickens. Take the chick in the left hand and let the head be placed between the two first fingers and in this way the neck can be extended. Then with the right hand dip a finger into the solution and anoint the head.

THE AUSTRALIAN

BEE BULLETIN

A Monthly Journal devoted to Bee-keeping.

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neck, and throat of the chicken. Do not saturate it, but at the same time see that all the fluff has a little put on it right down to the roots. In a week or ten days the chickens should have another application of the mixture. There are many other remedies for these lice or ticks, but the simplest and at the same time effective treatment is to place a small quantity of salad oil in a saucer, and the day after hatching dip the finger in the oil and rub it into the fluff of the chicken's head and under the throat. This will kill the ticks (if any) and if repeated the second or third day there will be little fear of any escaping. When the chicks are a week or ten days old they should again be examined, and if any of the vermin be found at this age a little kerosene can be added to the salad oil. It is best to anoint all chickens with the oil only immediately after they are hatched, such being a sure preventive of the scourge.

Our next article on 'Diseases of Fowls' will be on 'Scaly Leg.'

INTERESTING TO SMOKERS

After doing a steady day's work either in the garden, field, or store, a substantial meal is necessary to kesp the strength up and fit one for the next day's work. After dinner there is nothing so soothing as a comfortable smoke, and it is necessary for the man whose means are small to get the vesy best value for his money. The well-known brand of DIAMOND TOBACCO completely fills the bill, as it is at once the very best value ever offered. To those who like a strong tobacco the dark twist is most suitable, whilst for those whose taste is for a milder smoke the aromatic plugs are specially made. Whilst nearly all other tobaccos have been raised in price through the higher tariff, DIAMOND TOBACCOS are still sold at the old price, which is a sure guarantee the proprietors are doing their best to give the utmost benefit of their stocks to their customers, who seem to appreciate it, judging by the large increase in the sale of this favorite brand.

PRINTING

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Send us along a trial order.

The Dairy.

Dairy Notes.

Five pounds of skim milk is as good as 1 lb. of maize meal for feeding pigs.

On comparatively few farm dairies are milk records kept. This is unfortunate.

English farmers have for years made extensive use of Dwarf Essex forage rape as a stock feed,

Rusty cans and those with rough seams are very difficult to clean, and in bad cases only live steam or prolonged scalding will make them pure.

The length of time a cow will maintain her production depends on her constitutional strength and the care with which she is managed.

A good dairy cow should not show any marked falling off until after ten years of age.

A cow is at her best during her fifth and sixth years, up to which time the production of milk and butter fat by cows in normal condition increases.

It is well known that the farmers who are the most successful are those who make a speciality of dairying. This is due to the fact that the market is always ready for milk and butter.

Subsequent to the weaning period calves are allowed to lose in flesh, thus in a measure losing the benefit that would otherwise result from careful feeding during the milk period.

After a certain age has been reached—on the average seven years—the food required for the production of milk or butter fat again increases, both as regards dry matter and digestible components of the food.

Never before has so much attention been directed to the subject of securing pure milk under sanitary conditions for consumption in the big cities. Dairymen and farmers generally welcome this movement.

Dairy farming at present is a manufacturing industry that raquires a very high grade of intelligence, the closest watching of detail, and the conscientious performance of duty, if success is to be attained and maintained.

Young animals use a portion of their food for the formation of body tissue, and it is to be expected, therefore, that heifers will require a larger proportion of nutrients for the production of milk and butter than do other cows.

There are two classes of bacteria that bring about scouring. One produces a clear sour flavour; the other produces sourness, accompanied by gas, with which is usually associated a flavour varying from not quite clean to rancid.

The quality of milk produced by heifers is somewhat better than that produced by the older cows, for a decrease has been noted of one to two-fifths of 1 per cent. in the average fat contents of each year until the cows have reached the full age.

A good milking cow of exceptional strength, kept under favorable conditions, whose digestive system has not been impaired by over-feeding or crowding for high results, should continue to be a profitable producer till her twelfth year, although the economy of her production is apt to be somewhat reduced before this age is reached.

It is possible for a farmer to keep twice as many cows when he makes a large profit, because he can incur greater expense in purchasing food, and thus enrich the farm with manure; but what is better the farmer can more than double his profits with the same number of animals by using those that produce twice as much milk and butter as the common kinds.

The stomach of a cow recently killed in the Koroit district, Victoria, contained 4 lb. of quartz, a quantity of large bones, numerous pieces of glass of different shades, a number of the brass parts of cartridge cases, nails, fencing staples, lead, sandstone, sea shells, clothes buttons, and plated sleeve links. The buttons had apparently been attached to garments that had been eaten and digested.

Ropy milk contains a bacteria which causes the milk to become ropy. This bacteria is found in some waters. Therefore, milk pails, strainers, and vessels should be washed and scalded before being used, and no cold water put into the vessels after they have been scalded. The udder and flank of the cow should be washed before each milking with a solution made by mixing 1 part borax to 30 parts water.

The Tantanoola correspondent of the Millicent (S.A.) paper writes:—A cow belonging to Mr E. Popper died a few days ago after a short illness, and as she was in fair condition the owner thought it advisable to hold a post-mortem examination. He found that the stomach contained a quantity of brass tacks, hob nails, sprigs, and screws from the plates of heavy boots, a piece of cockatoo chain, nails about 2 inches long, and two pieces of solder. The cow had always appeared in good health.

"It is now recognised and acknowledged by all experts and leading butter-makers throughout the world that in the manufacture of high-grade butter starters are indispensable," says Mr Shirley, Government Instructer of New Zealand, "and I will say that the butter-maker

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CUT SOLES A SPECIALITY.

who is working under ordinary conditions and omits their use is behind the times and incompetent. In the preparation of starters the one important point is to have them absolutely free from undesirable bacteria. Therefore, it is essential that a special room and eqnipment that can be kept free from any source of contamination should be provided for this purpose, that all appliances an utensils used in this connection shou be free from rust or broken surfaces any kind, and thoroughly cleansed an sterilised with live cream."

The chief points to be looked for in a Hereford (says the 'Live Stock Journal') are—first, that the color should be distinct red, not too dark or too light; white face and mane, also white breast and belly, and white legs as far as the knee and hock, sometimes running up the flank The bull should have a good masculine head, not too long, broad between the eyes, which in turn should be large and prominent, with a mild look denoting docility of temper; the horn should be of moderate length, springing straight from the head. The cow's head should be much the same, but finer, and her horns should have a curve, and turn upwards slightly; they should be in both cases of a waxy white, although they are occasionally found tipped with black; the nose should be of pure white or flesh color. The bull should have a good rise of crest, deep sloping shoulders, well-developed brisket, straight back and belly line. wide loin, good springing ribs, moderately broad hips, tail well set on and falling on a plump line to the hocks. The hindquarters should be long from the hip backwards; the thighs, which are a very important point, should be large and full, showing plenty of width across when you stand behind, and they should be well meated to the hocks. The test of touch is difficult to describe, and can only be learnt by practice.—'Warwick Examiner.'

NARCISSUS "MADAME DE GRAFFE."

Some Dont's.

Don't be unkind to the milk cow,

Don't use a stick or whip, but kind words instead.

Don't allow any loafers around when milking, such as dogs or gossipers.

Don't expect the cows to come home from pasture by merely calling them, but drive them up slowly.

Don't yell at the cow, and beware of profane language, it leaves a bad impression.

Don't allow your finger-nails to grow long if you are a dairy milker.

Don't expect a cow to give as much milk when half fed as when properly cared for.

Don't allow your cow to be chased by dogs or be hurried when going to or from the milking yard.

Don't, when milking, beat the cow for stepping backward when flies are numerous.

Don't milk until dusk during the hot months so as to avoid the presence of the flies which so vigorously attack the cow just before sundown.

Don't permit the cow to drink impure water.

Do not feed the milk cow 'rotten' or decayed hay or any other unwholesome fodder.

Don't forget to give the cow civil treatment, and she will return the same in good measure.

Readers of this journal are notified by advertieement in this issue of Messrs. Crosby & Co.'s stocktaking sale. Their extensive and well assorted stock of general drapery they announce must be reduced to make room for fresh shipments shortly to arrive, and consequently prices will be cut from A to Z in order to make room for the new stock. Therefore we advise our readers to peruse Messrs. Crosby & Co.'s price list, and by so doing we feel sure they will take advantage of the opportunity offered them.

A Canary Record.

We have received the following communication from an esteemed subscriber in New South Wales, and gladly publish it. Perhaps some of our canary breeders can supply the information this gentleman asks for:—

Wycombe Road, Neutral Bay, or Box 980,
G.P.O., Sydney. January 1, '08.

Dear Sir—I think you sometimes rafer to birds in your columns. It may interest your readers to know that my little girl owns a pair of canaries that are responsible for 69 eggs in one long season, over 50 of which were duly hatched and reared and proved strong birds. The hen is at present sitting on Nos. 66, 7, 8, and 9, and I am hoping she may reach three figures. As far as I know she has already made a world's record, but possibly S.A. can beat it. I will be glad to hear the opinion of your experts.—Yours faithfully, James Chalmers.

Grevillea robusta is a useful plant for florists; its graceful fern-like foliage makes it adaptable for purposes for which few other plants, except ferns, are suitable.

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Mushroom Culture for Amateurs.

Raising mushrooms according to the methods usually prescribed—that is, in specially arranged houses or greenhouses—is practicable only for the professional gardener or the amateur who grows his crops with professional assistance. Correspondence has revealed quite an interest in this branch of horticulture, and many will be glad to know that mushrooms may be successfully grown in stables, cellars—including outdoor cellars or 'caves'—and buildings that may be darkened and kept at a temperature ranging from 45 to 65 deg., with no artificial heat. The best temperature is from 55 to 60 deg., with the air slightly moist. Under these favorable conditions mushrooms will usually appear in a month or six weeks. Root cellars or caves will serve for growing them in winter, or an ordinary cellar if the compost is properly prepared before the beds are made. When mushrooms are grown in the lowest temperature mentioned, it is essential to success that the place be dry.

First Preparations.—More failures are traced to using poor or improperly prepared manure than any other cause. Avoid mixtures, as from cow, horse, and sheep stable. Beds so prepared are liable to generate heat the second time, ruining the crop. Procure fresh horse manure in quantities not less than a generous wheelbarrow load. Shake out the coarse straw, then thoroughly mix one part of either new or garden mould with four of the manure, adding the soil and mixing as gathered. Place in heaps (under a shed secure from rain), turning it over each day to prevent it heating, until enough is collected. The whole mass should be kept very damp. Water should be added if necessary but not enough to make the manure so wet that water may be easily pressed from it. Turn it over at least three times a week to keep it from 'burning,' and oftener if necessary. Test occasionally with a thermometer, and when the temperature falls to 115 deg. it is ready for the beds.

Making the Beds.—If the beds are made in a cold cellar and no artificial heat is to be employed, box beds should be used. Make the sides twenty inches high by nailing together on edge two ten-inch boards. Four feet is a convenient width for gathering the crop, with any length desired. A bed of this height may be covered when the cellar becomes too cold without damage to the mushrooms. Place a layer of the manure four inches deep on the cellar floor and beat it down firm with a mallet or a brick. Proceed in this way with successive layers until the bed is ten inches deep in cellars where artificial heat is to be employed if necessary, and sixteen inches deep in cold cellars. Examine the bed every day and see that the temperature does not rise above 125 deg. It will sometimes go even higher, reaching a fiery heat. In this case make holes all over the bed with a heavy stick—an old spade handle is handy—allowing the steam to escape; when the heat falls, these holes should be rammed full of fine manure. The heat is tested by running a blunt stick down three inches and thrusting a thermometer into the hole as soon as the stick is withdrawn. When the heat at the depth of three inches below the surface has fallen to 90 deg. it is ready for spawning, even though the heat in the middle of the bed may be 100 deg.

Spawning.—There are two kinds of spawn, the English and the French. The English comes in bricks and is considered the better, as the beds continue in bearing longer. Break the bricks into pieces about the size of a hen's egg or an inch and one-half by two. A brick will make sixteen pieces. Lay these about eight inches apart each way over the bed. Then make holes with a sharp stick, inserting the pieces at a depth that will permit covering with an inch or an inch and a half of soil, covering with the soil of the bed as you go. When finished, firm the whole bed with the back of a spade.

Soiling.—This is done in from eight to ten days, sometimes even twelve days after spawning. Never soil until the temperature falls to 85 deg. If it is done before, the steam arising from the manure will be prevented from passing off, resulting in rotting of the spawn. Test the bed daily and soil when the temperature is right. Any garden soil will answer, made rather fine by being run through a half-inch sieve. Spread a two-inch layer over the bed and beat it firm with a spade. Again, if it is found that the temperature of a bed is falling too fast, running down to 80 deg., or perhaps 75 deg., on the third or fourth day after spawning, it should be soiled at once. This part of the work is not so much a matter of time as of conditions. As soon as the soiling is done, give the bed a thin covering of hay, doubling it as the temperature declines.

Watering.—Examine the bed every week from the time of spawning until bearing and never allow it to become dry. This will hardly happen if the manure was of the proper moisture when packed. The spawn will not 'run' in a dry bed, while one well spawned and tended will present a perfect network of white, thready material, termed mycelium. If the surface of the bed becomes dry give it a good watering, penetrating at least two inches but not drenching the bed. It is a good plan to give a watering six weeks from the time of spawning—if the surface be dry—just before the mushrooms appear. Use a watering pot with a sprinkler, and water at a temperature of 95 to 100 deg. The small mushrooms are apt to damp off if the bed is watered after they appear.

Gathering.—In from six to eight weeks, under favorable conditions, the mushrooms appear. All depends upon temperature and moisture. In gathering them, draw them out with a twist so as not to disturb the small ones in the clump, afterward filling the holes made with fine fresh soil. When the first crop is gathered, occupying three or four weeks, give the bed a half-inch dressing of fresh soil, forming it with a spade and following it with a watering at 95 deg. If this last layer of soil is mixed half-and-half with dry, crumbled manure from the cow stable, the crop will be much heavier. The same bed often gives three and four crops. Beginners need not become disheartened if the crop does not appear at the average time prescribed. A professional grower reports a heavy crop appearing after four months of waiting from the spawning time.

March Number of 1908

The Australian Gardener

(A Monthly Journal of Floriculture, Horticulture, Agriculture, and Poultry),

CONTAINS—

The Vegetable Garden—
  Operations for the Month
Flower Garden—
  The Oleander.
  Notes for the Month.
  How to Photograph Flowers.
Editorial.
The Orchad—
  Exporting Fruits.
  Cultivation.
The Dairy—
  Insanitary Milking Sheds.
  Dairy Notes.
Answers to Correspondents.
The Poultry Yard—
  Diseases of Fowls: Scrofula, Tuberculosis, Constipation, Scaly Leg, Liver Diseases, Leg Weakness, Gapes.
The Farm—
  Ensilage.
&c, &c., &c.

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Western Australia—c/o Messrs Gordon and Gotch, Limited, Perth

Contributors.

All letters, manuscripts, and matter intended for publication should be addressed to the Adelaide Office, corner of Pirie and Wyatt Streets, Adelaide, and in order to appear in the following issue should be posted to roach Adelaide by the 20th of the current month. It is necessary that correspondents should furnish their names and addresses.

Advertisers

Particulars of rates will be snpplied on application.

Subscribers.

The subscription rate is 3/6 per annum, posted to any address in Australasia.

Subscribers are asked to notify the Adelaide Office if they do not receive their copy of the paper; also any alteration of address.

WATER seems to be one of the easiest essentials in life to deal with, and while it seems the simplest thing in the world to water a garden there are limits to its simplicity. It can be over done or underdone and in both cases the results are bad. If too much water is given plants and trees will soon show a surfeit and droop and perhaps die, and the same results follow upon the lack of water at the right time. It is a question of judgment and experience. But the cheif consideration is to see that plants have a sufficiency of water by retaining in the soil, not on the top of it. The fork, the spade, and the rake must always go with the water. Keep the top soil open and free with a light covering mulch to keep out the heat and the gardener will find his water bill very much smaller and his plants and trees very much bigger than if he runs the water over a smooth baked surface of soil. Summer gardens in spite of the lack of a good rainfall for months should now look gay and beautiful right through to the Autumn fall, What with cannas, and zinnias, balsams, dahlias, sunflowers, and the like of brilliant bloomers, every little garden plot should smile upon the weary, heated and perhaps belated gardener. Our operations for the month give all directions for future beauties, and the gardener should always remember that he is not working for to-day and to-morrow, but for weeks and months ahead.

We publish an article upon that old-fashoned but ever favoured shrub the Oleander. It retains its popularity in spite of the poisonous properties that prejudice a good many nervous people.

What is said of the garden is equally true of the orchard, which means instead of the spade and the fork, the horse and the cultivator must be kept going as frequently as possible. Another article of seasonable advice is the proper methods of packing fruit for export, Orchardists cannot learn too much upon this phase of profits. Nothing will break the profits quicker in the whole year's work than a bad finish in the marketing.

Our dairy notes are well timed and the paragraph dealing with insanitary sheds will appeal to any dairyman with a spark of common sense, and after all this common sense is the most valuable asset in any dairy.

Attention is directed in the poultry yard to the parasite which causes scaly legs, kerosene washing being the best cure. We also commence an article of vital importance to all poultry breeders and consumers, relative to the disease of pulmonary tuberculosis. People are not sufficiently alive to the insidiousness of this diseae and too much care cannot be exercised by those who have to do with birds and animals.

Everything on the farm is now dry, dry as dust, and the animals are the first to show the serionsness of the position, apart from the enormous price of food in the way of bran and chaff and other articles of food; the paper by Mr Dowling upon ensilage is therefore very timely. He draws his own conclusions of its value and the method of obtaining it from his own experience and it is therefore well worth perusing to those who dread the coming of summer, and now feel the pinch of poverty in feed.

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The Vegetable Garden.

WHITE CURLED ENDIVE.

Operations for the Month.

The weather is likely to become gradually cooler, and a sort of second spring will take place, which makes the autumn one of the most pleasant seasons of the year. Clear up all rubbish, weeds, useless vegetables, and so on, and heap them together to rot, and they will become most useful manure when they have decayed away. Whenever this rubbish stinks or becomes offensive, throw a few spadesful of dry soil completely over it from time to time, and it will prevent all disagreeable odours from arising.

Every opportunity for preparing new ground should now be taken, and any ground that has been under crop for a long time could be much improved by trenching 2 feet deep at least, and by draining. If it had been trenched, it will do it all the good in the world to retrench. It may be mentioned that land that is trenched, and not well drained, is very liable to 'run together' again—that is, to become hard below the surface. There is perhaps no more important operation, either in agriculture or horticulture, than draining; but unfortunately for those who neglect it, the work is but seldom properly attended to. When trenching or deep digging is being done it would be wise to mix some good manure, say bonedust, costing about 5s. a cwt., with the soil—not merely with the surface soil, but the whole depth.

Asparagus.—It would be advisable to get a bed ready for some plants as soon as this can be done. The ground should be trenched 18 inches or 2 feet deep, some manure being well mixed up with the surface soil as it is being dug. It is not necessary to make a very large bed, for a few plants evan will give an occasional dish, if the plants are looked after; and if the soil happens naturally to suit them the supply will be considerable. When the ground has been dug up it should be left as rough as possible until the time comes for planting in the very early spring. Asparagus likes a rich sandy deep soil, but it will grow fairly well in almost any kind of soil that has been well prepared. It is a native of the seacoast of Europe, and has been in cultivation from remote times and long before the Christian era. It is found growing wild in the sandy interior of Russia, far away from the sea-coast, but probably the soil there is saline. It should grow well in the inland parts of this State where the saltbush grows, and it will probably succeed splendidly where it could be irrigated by the water from artesian bores. At the present time nothing need be done beyond preparing the ground.

CONOVER'S COLOSSAL ASPARAGUS.

Bean, French or Kidney.—In the warm districts a few rows should be sown if the soil is not too dry. It will probably be too late to sow in the cold districts, for the plant cannot stand frost. Plants that have ceased to bear should be pulled up to make room for some other kind of vegetable. Old withered plants of beans or peas when allowed to remain give the vegetable garden a most miserable neglected appearance, besides tading up space that might be producing something useful. Every grower of vegetables should try to keep his garden tidy and make it worth looking at. If this be done the place will become more and more interesting and profitable.

LARGE GREEN PARIS ARTICHOKE.

Bean, Broad.—The soil best suited to this vegetable is a heavy clay loam, although it will grow and bear well in almost any kind of soil It would not be advisable to sow to any great extent during the present month Dig the ground well, and if it is poor apply plenty of horse or cow dung, and if this has been well rotted all the better. If artificial manure is used apply little or no sulphate of ammonia or nitrate of soda. Use bone dust or superphosphate of lime and potash. Sow in rows from 2 to 3 ft. apart, according to the variety, for the dwarf-growing kinds may be sown closer together than the tall. The seed should be sown about 4 or 5 inches apart in the rows.

Beet, Red.—Sow a row or two of this useful vegetable. Thin out well any plants that are coming up from previous sowings.

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Beet, Silver.—Sow a little seed in ground that has been well manuaed—that is, if the soil is not naturally sufficiently rich without it, which is generally the case.

BELL'S BEET.

Borecole or Kale.—It is doubtful if this vegetable is worth troubling about when there are so many other kinds of the cabbage family that can be grown. It will succeed best in the coolest districts. Seeds may be sown in beds or boxes like cabbage, and the seedlings afterwards transplanted. It prefers a rather stiff soil, but may be grown successfully in almost any garden.

Broccoli.—Seed may be sown in the same way as cabbage seed, and the seedlings afterwards transplanted, bearing in mind the rule that the richer the soil the wider apart the plants. Plants available from previous sowing may be planted out.

Cabbage, Brussels Sprouts, Cauliflower, and Savoy may be planted out if well-grown seedlings are available. Seed also may be sown, and care should be taken not to sow it too thick in the drills.

Celery.—Sow a pinch or so of seed in order to have the plants available when required. It should be remembered that celery requires a great deal of moisture during its growth, for its native localities are wet and marshy places Plant out a few well-grown seedlings in well-manured ground. Make shallow trenches so that water and liquid manure when applied will not run to waste. It may be mentioned that although the plant requires plenty of water during its growth, it may be possible to over-water, whereby the result is a loss of flavor. The proper quantity to apply can only be learned by experience, and anyone who will take an interest in the gardening work will soon learn, The best manure to use for celery is the droppings of farm animals, mixed well with the soil when the ground is being prepared. If anyone wishes to try the common old method of growing and blanching this plant he should dig out trenches 12 inches deep or more and about 16 inches wide, the soil taken out of the trench to be spread along the top of the bank. At the bottom of the trench dig in a good supply of manure and plant strong stocky young seedlings 9 inches apart in the middle of the trench. The seedlings should be removed from the seed-bed with care and the roots injured as little as can be avoided. When the plants have attained a good growth they can be earthed up so as to make the stalks white, or 'blanched,' the ordinary term used. The soil must not be allowed to drop into the centre of the leaves, or they will probably decay or become injured and unfit for use. Some gardeners tie paper round the stalks, but this is unnecessary if the stalks are held together, and care is taken when earthing-up is done.

Cress and Mustard.—Sow a little seed every now and then in a small, well-manured piece of ground. The plants will need water frequently when they come up, and also subsequently.

Endive.—Seeds may be sown in a seed-bed or boxes, and when the seedlings have grown large enough to handle they may be transplanted. This plant is best suited to a warm climate Plant out about 1 foot or 15 inches apart. When the plants are pretty well full grown the leaves should be tied together so that the inner ones may become white and tender.

Herbs.—Seeds of all kinds may be sawn. These useful plants should not be forgotten. Sow in pots, boxes, or seed-beds, and afterwards transplant. Parsley should be transplented whilst it is very young, for it soon sends out a long tap-root which had better not be broken.

Lettuce.—Sow seed in the seed-bed for future planting out. If any strong young lettuces are to be had plant them out in rich, well-dug ground. It is very often the custom to sow lettuce seed at this season of the year in rows where the plants are to grow, and not transplant, because transplanted lettuces are very likely to run quickly to seed.

Leek.—This time of year is about the best season to sow seed largely of leeks. Prepare a seed-bed and sow in rows. When the plants are about 8 inches in height they may be transplanted to a bed made exceedingly rich with good farm-yard manure. Make shallow trenches and plant in rows about 18 inches apart, the leeks to stand about 9 inches from each other. Water and liquid manure will be needed often if it is desired to grow the best of plants.

Peas.—In cool, moist climates sow a few rows of this excellent vegetable. Prepare the ground well, and if it is poor apply a good deal of farm-yard manure.

Radish.—Sow a little seed occasionally to keep up a supply.

SHORT FRENCH CARROT.

Sea Kale.—Sow a little seed in a seed-bed and afterwards transplant the seedlings, just as cabbages are planted, to well-manured, deeply-prepared ground; when the plants attain a good size they need to be covered and blanched, and for this purpose special kinds of pots are made, but dead leaves, manures with plenty of straw, boxes, or something to keep the light away from the plants, will answer.

Spinach.—Sow seed in drills in rich, rather moist, but well-drained soil. Let the drills be about 18 inches apart, and when the seedlings appear, thin them out well. This is a very good vegetable and well worth growing.

Shallots and Garlick.—Plant out in drills about 1 foot apart as much of this useful vegetable as is likely to be required. The bulbs or cloves can be purchased from any seedsman. Dig the ground deep and manure it well. When planting just press the bulb firmly into the soil. Keep the plants free from weeds as they grow. Garlic may be planted out in the same way as the above, taking care to divide the bulbs.

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The Flower Garden.

The Oleander.

[By J. Cronin.]

Nerium—the oleander, is a genus of dwarf shrubs containing three species with several varieties. and is found native in the south-east of Europe and the West Indies. It has been cultivated in England in greenhouses for more than three centuries, and in the south of Europe, where it has become naturalised in many places, for a longer period. It is described in English horticultural works as a plant of great beauty when in flower but virulently poisonous in all its parts. Several hybrid varieties have been raised by Continental nurserymen, a marked improvement having been effected in regard to floriferousness, variation of colour, and in some instances size of the blooms.

The oleander is one of the best hardy shrubs in cultivation, thriving under severe conditions and producing flowers freely during the hottest season of the year. The flowers are not greatly affected by hot sunshine and accordingly the plants are bright and effective for some time. Some of the best of the florists' varieties have been imported, the value of which when known will induce a much more extensive cultivation of this truly hardy flowering shrub. For small cottage and villa gardens the oleander is especially suitable. The height of the plants varies in the different species and varieties—from five to twelve feet normally, a size that can be easily curtailed if necessary. A variegated form of Nerium splendens is probably the most handsome dwarf shrub, bearing bright blooms in addition to a beautifully variegated foliage. This variety is not as hardy as the green leaved kinds and requires a more sheltered position.

The soil most suitable to the oleander is a light well drained loam, but it is not fastidious; if the soil is sweet any fair garden soil will suffice to produce and maintain the plants in a vigorous condition. In preparing a site in the bed or border the soil should be worked to a depth of about two feet and some well decayed manure incorporated. As a specimen plant for small lawns the oleander has few superiors. Though the plants are hardy and will endure a deal of drought, they should not be planted close to large trees, for though they would probably exist for years, and in exceptionally favorable seasons produce a fair amount of bloom in such situations, they are not as satisfactory as when planted where they receive full light and sunshine. Under shade conditions they are very liable to be attacked by scale insects, several species of which are particularly partial to them. They are easily cleaned by the use of kerosene emulsion or resin compound applied as a spray when the growths are matured.

Plants may be set out from pots during spring or autumn. At these seasons very little attention is necessary in shading or watering plants that may be somewhat tender owing to their being grown in shadehouses in the nursery. A thorough watering at planting time and an occasional stirring of the soil in warm weather is generally sufficient to establish them. Larger plants may be safely lifted from the open ground and transplanted at the same seasons. A fair ball of earth in accordance with the size of the plant should be retained, and the roots be as far as possible uninjured. A thorough soaking, and staking if necessery, will insure safe removal. Established plants require no special care, except in very dry and exposed situations when they benefit by a mulch of manure or weeds applied early in spring. Very little pruning is required; an occasional thinning of the shoots, if becoming crowded, and stopping of extra vigorous shoots or branches that tend to destroy the symmetry of the plants, are all that is necessary.

Oleanders are propagated from cuttings inserted in pots of sandy soil in autumn. The pots should be placed in a close frame until the cuttings are rooted. They are also propagated from cuttings placed in bottles or other vessels containing water; in this case the cuttings are tied in bunches and suspended in the water. This is usually done by nurserymen who have hot or cold houses for purposes of propagation. The cuttings should be about six inches in length, taken from shoots of the current season's growth and cleanly cut immediately below a joint from which the leaves have been removed. They root readily if layered in early summer, and are usually fit to remove and transplant in the following spring. Layers require watering in dry weather. Splendens is the largest grower and most suitable as a specimen plant. The variegated form of this kind is a beautiful specimen or border plant worthy of cultivation in any garden. Other varieties of merit are:—Album plenum, luteum plenum, grandiflorum plenum, Delphine, Madame Peyre, Madonna grandiflorum, Monsieur Belaguier, Mdlle Dubois, Mdme. Martin, Souvenir de Cazallis Allut; Dr. Goldfire.

Pansies.—When pansies are planted in a bed or border provision should in some way be made for the furnishing and planting of something to take up the room the pansies occupy, after they are done flowering. Pansies are not satisfactory when left in their places all summer.

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Notes for the Month.

March is a good time of the year to plant out many kinds of bulbs, and no one should be without daffodils, crocuees, snowdrops, sparaxis, ixias, hyacinths, etc. These may all be planted, and the earlier the better—that is, if the soil has been prepared for them. They can be planted singly, in clumps, or in rows, or in any way which you please or circumstances may require. Daffodils, hyacinths, tulips, crocuses, snowdrops, and snowflakes will come in the greatest perfection in the cool climates in this State, but they will give great satisfaction almost everywhere. After planting, spread a mulch of cow or horse dung over them. The depths for planting should vary with size and variety—the largest from 3 to 4 inches, and the smallest about an inch. It would be advisable to have the ground properly drained, for bulbs will not succeed in ground too wet. All the charming little flowers—daisies, cowslips, primroses, polyanthuses, auriculas, and so on—may be planted during the latter part of the month. Violets, too, should not be forgotten, and they, especially the double varieties, come to the greatest perfection in our coolest climates, although the singles succeed fairly well almost anywhere, if thero is sufficient moisture for them. Sow some seeds of ten-week stocks in a bed, or in boxes, for transplanting when the seedlings are large enough to move. The plants will flower in the spring. All sorts of hardy annuals and perennials may be sown, either in the garden where they are to flower or in boxes or pots. It will probably be thd best way to sow in boxes or pots, ane afterwards tronsplant, because seedlings in the garden whilst very young and tender are so liable to injury from insects and other pests.

The seeds should be sown with care on a finely-prepared surface of soil which has been made fine as well as level. Sow very thin and barely cover with soil. Keep moist, but not too damp. When strong enough plant in the garden.

Cuttings of roses, fuchsias, geraniums, pelargoniums, verbenas, and many other plants will strike early this month. Shade well after planting, and keep them moist, but not too damp.

How to Photograph Flowers.

[By A. Ratclyffe Nugmore.]

The subject naturally divides itself into two parts, cut flowers, and growing flowers. In either case a long-focus camera and isochromatic plates are necessery. Any ordinarily good lense will answer, great speed not being possible for the reason that considerable depth of focus is indispensable, and therefore a small diaphragm has to be used.

TREATMENT OF THE SUBJECTS.

Cut flowers offer wonderful opportunities for beautiful pictures, the scope of arrangement and lighting being very great. It is the lack of rigidity in blossoms after they are cut that offers one of the greatest difficulties in this work. There seems to be an almost continuous movement on the part of some flowers; either they expand or close, or else they droop or quiver. Some varieties must be cut overnight and kept in water or a damp box in a cool place until two or three hours before you wish to make the photographs, when they should be put in water and in bright light: if possible, arrange just as they are to be in the picture, so that further handling will be unnecessary. Flowers which have a very short blooming period can seldom be kept overnight. It is better to take a vase to the garden and put the flowers in it directly they are cut, but do not keep them in the sun longer than is necessary. Photograph in a bright light and have all windows closed during the exposure, and do not walk about the room or the flowers will shake. Every precaution should be taken to keep flies away, for they have a knack of settling on a flower the moment the lense is uncovered. On hot days keep a large, thoroughly wet cloth spread near the flowers. A piece of lead ribbon S-shaped will be found useful in holding stiff-stemmed flowers in position. The lead is pinched against the stem of the flower and is placed in a shallow tray of water. If a formal arrangement is desired, pin the stems to a board, if they are long enough to reach the water, so much the better, otherwise wrap them in wet absorbent cotton. Very delicate flowers should be laid on a piece of glass and photographed from above, with the camera pointing downward, or by means of a prism attached to the lens. This latter method allows the camera to be used in a horizontal position while the prism points towards the flowers.

THE PLATES TO USE.

As already stated isochromatic plates must be used if good results are expected. Remember that ordinary plates reproduce yellow, orange and red very much too dark, green rather too dark, and blue and

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violet much too light. A bright lemon-colored flower with a fairly dark blue centre would be shown in the photograph as a very dark flower with a light centre. i e., completely reversing the original order; while if the slow isochromatic plate is used, a fairly truthful rendering of the colors would result. When blue and yellow are found together, it is generally best to use a pale yellow ray filter or color screen. White flowers with dark foliage need the isochromatic plate; white flowers with red or yellow markings need in addition, the ray filter. Never use a ray filter except with the isochromatic plates, and do not be afraid to give a full exposure, for, if under-exposed, they give wretched results. Be sure also of your darkroom light; let it be very subdued and keep the plate screened until it is pretty nearly developed.

THE BEST BACKGROUNDS.

The best backgrounds to use are those which show no texture, and even they should be at some distance from the flower. The ordinary opaque window shades make very good backgrounds, and have the merit of convenience and cheapness. If absolutely clear black is wanted there is nothing better than black velvet. White paper gives a very good white, but it must not be placed too far from the subject, and backed or non-halation plates should be used. They are in fact advisable for all flower work if the expense does not have to be too carefully considered.

AURICULA.

OUTDOOR WORK.

For out-of-door flower photography, the question of weather is all important. The slightest wind makes the work impossible. Owing to the smallness of the diaphragm necessary to secure the desirable depth of focus, the exposure has to be so long that the flowers will show motion if there is the slighest wind. The early morning or late afternoon offers the best opportunity. not only because there is usually less wind at those times, but also because the low sun gives long shadows which greatly enhance the beauty of the picture. Bright, cloudy days are very often more satisfactory than clear sunlight.

HOW TO FOCUS.

In arranging the camera be sure you focus on the near flowers rather than on those at a distance. A sharp middle distance and blurred foreground make an eminently unsatisfactory picture. For low growing flowers it is well to place the camera very near the ground, sometimes within a foot or so. Occasionally it will be found effective to photograph with the light in front of the camera, especially when the flowers are cup-shaped, Be careful, however, that the sun does not shine directly on the lens. A black light is very seldom effective, but is almost necessary for dark red flowers, which if in shadow appear nearly black in the picture.

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CHRYSANTHEMUM CHAMELON.

Aconitum autumnale is a beautiful plant with fine spikes of dark blue flowers.

Sweet Peas.—The old notion that peas should be planted or sown thickly is gradually giving way in the light of the knowledge of the fact that plants grown from seeds sown very thinly are not only capable of producing finer flowers, but they also continue in a growing condition for a longer period. When the seeds are sown thickly the plants invariably rot as a result of matting and damping caused by such close adhesion. The flowers should be regularly picked from sweet peas no matter whether they are wanted or not, if it is desired to prolong their season of blooming of the plants.

Mignonette.—No place, private or commercial, should be devoid of mignonette. Old fashioned as this favorite is, it is nevertheless possessed of a perfume perhaps unequalled.

Heliotrope is a plant exquisite in flower and delightful in perfume. It does not stand well after being cut, but a number planted in a bed or border will scent the air with a delightful fragrance peculiar to itself.

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The Orchard.

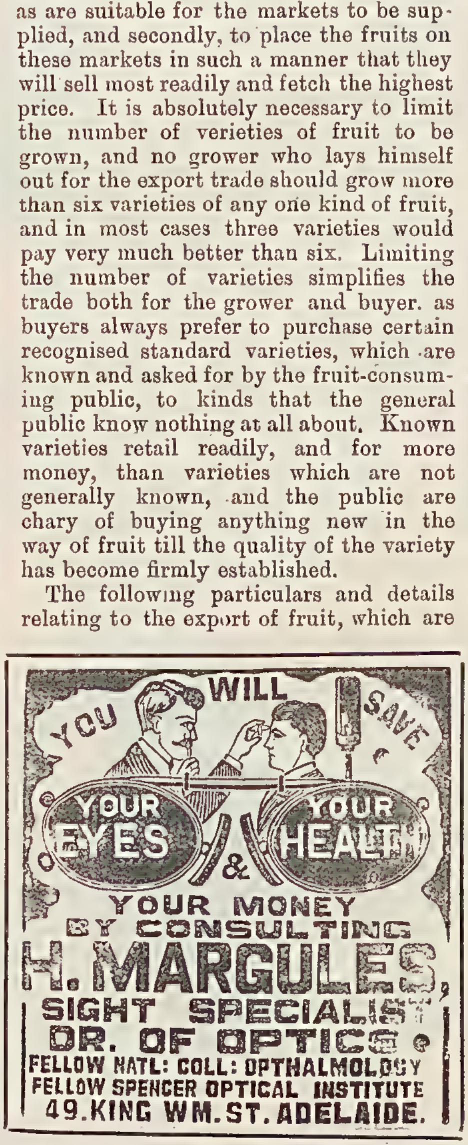
Exporting Fruits.

It is essential that our fruit-growers should thoroughly realise the importance of exporting nothing but the very choicest fruits, as the markets we have to supply require nothing but the very best, and the expense of getting the fruit on to those markets is so great that no fruit, except it be of superior quality, will realise a sufficient price to cover the expense of shipping and marketing, and leave a fair margin of profit for the grower. It costs just as much to pick, wrap, pack, ship, and sell a case of inferior fruit, which will never realise enough to defray expenses, besides injuring the reputation of our fruits, as it does to send a case of choice fruit, which sells raadily at a remunerative price, and tends to establish a character for our fruits that will result in a permanent and profitable trade.

The importance of exporting nothing but the choicest fruits cannot be too strongly impressed upon fruit-growers, as it is the primary and absolutely essential condition for the establishment and maintenance of a successful fruit export trade. It is the key-note of all counsel that we have received from the great fruit houses of London and elsewhere, their invariable advice is :—Send us nothing but choice fruit, grade it evenly, and pack it honestly, and we will have no difficulty in disposing of it at a profit; but inferior, badly-packed fruit we do not want at any price, as it is hard to dispose of, injures the reputation of the whole State's fruit, and only results in loss to the shippers.

In order to establish and maintain a profitable export trade in fruit, it will therefore be necessary for our growers to lay themselves out especially for this trade, and to do this it will be necessary, in the first place, to grow only such fruits as are suitable for the markets to be supplied, and secondly, to place the fruits on these markets in such a manner that they will sell most readily and fetch the highest price. It is absolutely necessary to limit the number of verieties of fruit to be grown, and no grower who lays himself out for the export trade should grow more than six varieties of any one kind of fruit, and in most cases three varieties would pay very much better than six. Limiting the number of varieties simplifies the trade both for the grower and buyer, as buyers always prefer to purchase certain recognised standard varieties, which are known and asked for by the fruit-consuming public, to kinds that the general public know nothing at all about. Known varieties retail readily, and for more money, than varieties which are not generally known, and the public are chary of buying anything new in the way of fruit till the quality of the variety has become firmly established.

The following particulars and details relating to the export of fruit, which are derived from a large number of sources, and are the result of the actual experience of growers, shippers, and dealers in all parts of the world, must be strictly adhered to by our growers and shippers if we are to establish a profitable export fruit trade that will be a source of wealth to the State, and any neglect to comply with the advice given, which is based on experience, is bound to result in failure :—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1. Allow the fruit to become fully developed, but not fully ripe, on the tree before gathering; fruit too ripe will not carry. The best stage at which to gather varies considerably with different fruits, and with different varieties of the same fruit, so that it can only be determined accurately by actual experience.

2. Gather the fruit carefully, avoiding all bruising, as a bruised fruit is a spoilt fruit—in fact, a cull—and consequently is unfit for export. Gather when dry. Cut—do not shake or pull—it from the trees.

3. Sweat the fruit carefully, by allowing it to remain in the picking-boxes for a few days. This will tend to get rid of the superfluous moisture of the skin, and to toughen the rind, thus rendering the fruit less liable to injury by bruising during shipment.

4. Grade the fruit thoroughly—firstly, for quality, excluding all blemished, marked, scaly, or imperfect fruit as culls; and secondly, for size, as large and small fruit should never be packed together.

5. Wrap each fruit carefully, using a soft, light, but tough paper. The fruit must be completely covered by the paper, and the stem end should be so protected that when packed there is no chance of the stem of one fruit puncturing the fruit packed next to it. Use attractive wrapping-paper, which should be stamped with the brand of the grower or shripper.

6. Pack firmly, evenly, and neatly, so that there is no chance of the fruit shifting, but not so tight as to bruise the fruit and crush it out of shape. Only one size and quality of fruit must be packed in a case, which must be branded accordingly, as a single undersized or inferior fruit will spoil the sale of a case, or, what is of more importance, the sale of the whole shipment of the same brand, should it so happen that the case containing the faulty one is the one to be opened when the case is being sold. Packing should be done in such a manner that no matter which side of the case is opened the fruit will open up so as to show to best advantage. In the English market the case is always opened from the side, not from the end, as a larger quantity of fruit is thus exposed to view, and any dishonest packing is readily detected. If there are any small spaces between the fruit, never try and cram in a small fruit, but fill the space with white paper shavings, a layer of which is an advantage to place in the top and bottom of the case as well, as it

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Yorkshire Fog Grass (Holcus lanatus)—A very hardy grass. growing on almost any soil. Sow 20 lbs. to acre.

Perennial Rye Grass—Very nutritious and relished by all stock. Sow 2 bushels to acre.

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Yellow Trefoil or Hop Clover (Medicago lupulina)—A fibrous-rooted biennial, very productive, produces early Spring crop; largely used in S.E.

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Red Clover (Trifolium pratense)—Sow 10 lbs. to acre.

COW GRASS or PERENNIAL RED CLOVER, Mammoth Clover (Trifolium pratense perenne)—Sow 10 to 12 lbs. to acre.

LOTUS CORNICULATUS (Birdsfoot Trefoil)—Deep-rooting perennial.

TRIFOLIUM SUBTERRANEUM—An annual of very spreading habit. In good soil one plant will cover 6 feet, producing a wonderful quantity of excellent fodder. 1/- pkt.

STRAWBERRY CLOVER (Trifolium fragiferum)—A very valuable variety for damp land.

ALSIKE CLOVER (Trifolium hybridum)—A hardy hybrid variety, flowers delicate pink

ITALIAN CRIMSON CLOVER (Trifolium incarnatum)

KING'S ISLAND MELILOT (Melilotus)—Makes excellent silage, and is very good for green manuring.

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Best quality seed, specially sifted to prevent dodder.

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Tares or Vetches—An authority says:

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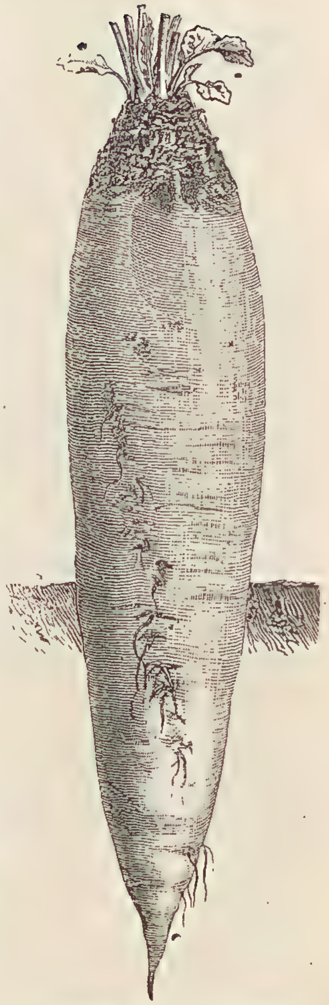
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Mangel Wurzel—Most valuable fodder roots. Sow 6 to 8 lbs. per acre

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GIANT YELLOW INTERMEDIATE.
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SWEDES—Purple Top. Elephant Swede. Kangaroo Swede.

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forms a cushion for the fruit and minimises the danger of bruising. Never use a newspaper in any form, either for lining the cases or to fill up any spaces. as the printer's ink is readily absorbed by the fruit, to which it imparts an unpleasant flavour.

7. Use light, dry, clean, neat cases, having cleats on one side so as to allow for ventilation when stacked. Line the cases with strong white paper, and after packing leave the fruit for a day or two, if possible, to settle before nailing on the lid. The dryness of the case is of the first importance, and much loss is now caused by the use of green timber for cases that are used for export.

8. Brand every case distinctly—first, to show the kind, quality, and number of fruit it contains; and, secondly, with the brand of the grower or shipper, which should be either a litho. or a stencil. Whatever brand is used it pays to have it attractive, and in addition to it being attractive it should be distinct and readily distinguishable. as this will save a lot of trouble when loading and unloading the vessel, and there is little chance of the cases becoming mixed.

9. Maintain the quality of your brand. Don't think that all you have to do is to establish a reputation for your brand, and that you can then trade on the reputation, and so work off inferior fruit. You may do so once, but you will destroy the confidence of your buyers, which confidence in a brand once destroyed takes a long time to become re-established.

10. Handle the goods carefully when shipping. Never use slings. as they bruise the fruit badly.

Cultivation.

If you want to grow good fruit, and to make fruit-growing pay, you must cultivate your orchard thoroughly.

Keep the orchard clean. No orchardist can afford to grow a crop of weeds and a crop of fruit at the same time. If it is too much trouble to keep the orchard clean, then the best thing the owner can do is to quit growing fruit; he was not made for an orchardist, and should take up some easier line of work. Rest assured that if an orchard planted with the right varieties, in a suitable soil and district, can only pay when given thorough care and attention and kept in the highest state of cultivation and free from all fungus pests, a neglected, ill-pruned, ill-cultivated, and diseased orchard will stand a very poor chance, besides being a disgrace to the district and a propagating and disseminating ground for every kind of disease that fruit is subject to. Thorough cultivation is of the greatest importance to the orchard, as, besides keeping the land clean and friable, it is the surest way of retaining moisture in the soil during a dry time. Where uncultivated land will dry right out and be perfectly unworkable, the same ground properly cultivated will retain all the moisture necessary for the trees' growth, and, what is more, should there be a shower at any time during the dry spell, the cultivated land will absorb and retain all the rain that falls, whereas the uncultivated land will absorb little, if any, the greater portion running off the surface and being lost. Every weed growing in an orchard in a dry time is robbing the trees of the water required for their proper development; so, therefore, if for no other reason, the orchard should be kept as clean as possible. Besides this, the growth of weeds and the accumulation of rubbish in an orchard forms the best of shelters for many injurious fruit pests. and renders it difficult to deal successfully with them.

Thorough cultivation is the best remedy against drought. in that by keeping the surface of the soil in a fine state, and never allowing it to set, the surface acts as a mulch, and prevents the loss of moisture from the soil by surface evaporation. By preventing the surface soil from setting you prevent the formation of capillaries right to the surface of the land, and it is through the capillaries that surface evaporation takes place. Every orchardist knows how moist the soil keeps when covered by a mulch of straw, leaves, or bush-raking, and a soil mulch produced by thorough cultivation has the same results. and for the same reason, viz., that it prevents surface evaporation. The method of cultivation to be adopted is the same in all cases. the implements used depending on the nature of the soil and the size of the orchard.

Plough the orchard during the winter and cultivate during the summer. Ploughing tends to sweeten the soil, and to break up any pan that may be formed, as well as to bury any weeds and trash that may have gathered in the orchard after the summer cultivation is dispensed with. Plough the orchard as soon as it has been pruned, and leave it in the rough so that any sourness in the soil may be sweetened. Plough well, the depth depending on the variety of fruit and the nature and depth of soil. Use implements that turn the soil right over, and for this purpose the short-breasted American ploughs are the best, being easier to pull, better to handle, and doing more work than the ordinary

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MILK AND ITS PRODUCTS, 9th ed., 1905, by H. H. Wing. 5s.; posted, 5s. 5d.

THE FEEDING OF ANIMALS, 3rd ed., 1905, by W. H. Jordan. 6s.; posted. 6s. 5d.

PRACTICAL GARDEN BOOK, 4th ed., 1904, by C. E. Hunn and L. H. Bailey. 4s.; posted, 4s. 4d.

WORKS BY L. H. BAILEY.

Principles of Vegetable Gardening, 5th ed., 1906. 6s.; posted, 6s. 8d.

Principles of Fruit Growing, 9th ed. 1906. 6s.; posted, 6s. 7d.

Principles of Agriculture. 10th ed., 1905. 5s. 6d.; posted, 5s. 11d.

Garden Making, 11th ed., 1907. 5s; posted, 5s. 5d.

Horticulturists' Rule Book, new and revised ed., 1907. 3s. 6d.; posted, 3s. 10d.

The Forcing Book, 6th ed., 1906. 5s.; posted, 5s. 4d.

The Pruning Book, 7th ed., 1906. 6s.; posted, 6s. 6d.

36 King William Street. 36

English type of plough. In a small orchard a single-furrow, one-horse plough is all that is required, but in large orchards two, three, or four-gang ploughs can be used if the trees are planted at a proper distance. All the land that can be turned over by means of big ploughs should be so treated, and that close to the trees should be ploughed with single-furrow, one-horse ploughs, fitted with special side-draught, so that the whole of the land can be ploughed right up to the line of trees

The object of summer cultivation is to stir the land, not to turn it. As mentioned before, it is the prevention of the formation of capillaries in the surface soil, by keeping it in a state of perfect tilth, that prevents the surface evaporation of moisture. No cultivator should be used which turns the soil or throws it up in ridges, as this will rather tend to dry out the ground by bringing moist soil to the surface, and also, the land being in ridges, there is a larger surface exposed to the influence of the sun and air than if it is left even and level. Ridges are also to be guarded against, as in the case of heavy rains, such as thunderstorms, they form channels for the water, and tend to cause washing. It is a mistake to expect the same implement to kill weeds and stir the land properly at the same time. The coulters that are best suited for stirring the land are of little value as weed-killers, as they do not cut any extent of the surface. Where weeds are troublesome they should first be got rid of by coulters made for the purpose, or by means of specially-made weed knives.

For summer cultivation implements of the Planet Junior type, worked by one horse, and fitted with sets of teeth for surface working to kill all weeds, and with narrow cultivator-teeth to stir the lands deeply, are the best for small orchardists; whereas for large orchardists two-horse implements, such as the Planet Senior, Top-Notch cultivator, or Morgan spading harrow are to be preferred. The latter is a splendid orchard implement that reduces the surface soil to a very fine state, and consequently renders it a good mulch, as the finer the surface soil the more perfect the mulch and the less the surface evaporation. There are two great secrets in summer cultivation. The first is to work the land at the right time, and the second is never to allow a crust to form. After heavy rain the cultivators should be kept going as hard as possible—as soon as the land will carry the horses without packing—because the sooner the surface of the soil is stirred after rain the finer will be the tilth obtained, and more moisture will be retained in the soil. Never neglect this. Remember that the more moisture you can retain in your soil in a dry district the better the returns, and neglecting to retain the moisture when you get it very often means the loss of your crop. You cannot over cultivate if you cultivate properly. Stir the land and stir it deeply. Do not turn the soil. If you do, you bring moist soil to the surface and consequently lose moisture; therefore use narrow teeth that stir but do not turn the soil. Keep this in mind: Plough deeply in winter, cultivate frequently in summer, and grow a green crop, preferably clover, in autumn to maintain supply of humus.

For Beginners.—The chief aim of a beginner (as it has been of those who have been most successful) should be to grow good material, better if possible than his neighbors, in order that buyers can see it to be to their advantage to purchase from him in preference to others whose stock is of inferior quality; and then when he gets the confidence of buyers by such a substantial method and continues to merit it, there will be little danger of his stock remaining on his hands unsold. On the other hand, a man who starts in to grow as much material as he possibly can find room for, paying less attention always to quality than to quantity, has usually a harder time of it in disposing of it than he had while raising it, while invariably, in the event of his continuance of the same methods, his subsequent experience will be more disappointing and disheartening still.

Origin of Reinforced Concrete.—About forty years ago a French gardener, Joseph Monier, first conceived the idea of embedding metal in concrete in an endeavour to lessen the thickness of some flower-pots he was making, and from this simple beginning, by slow stages and after much experimenting, the great system of reinforced concrte was evolved.

Flora: "Is there much money in the flower business?" Florist: "At least there are a few scents."

To Correspondents.

D. Campbell.—The Aylesbury duck should be spotlessly white, both duck and drake. The bill should be long, broad, and pinky-white in colour, and run straight out from the head, the legs are bright orange. The body is very long and deep, with plenty of keel carried parallel with the ground. The tail of the drake is ornamented with two or three curled feathers. Aylesburys are early layers: the colour of the eggs varies. the ducklings mature very rapidly, weighing 4 to 6 lbs when ten or eleven weeks old. If you wish to breed for profit only we recommend you to keep Indian Runners.

"Fertiliser" wishes to know when to apply fertilisers?—At any time from the beginning of autumn up till the end of winter. Earlier for heavy soils which clog. Add a little lime.

"Oranges."—Let your young trees make as much wood as they can during the first 3 or 4 years and rub off any signs of fruit.

"Marketing."—The secret of successful marketing of fruit for oversea is an even grade and absolutely free from bruises. Handle your apples as though they were eggs,

"Roses."—Yes, go on with your roses, they will bloom right through to the end of autumn, and lovely flowers you should still get.

"Chrysanthemum."—We could give you any amount of advice, but the best plan is to make the acquaintance of any enthuisiast, and he will tell you more in ten minutes than you could read in a month. But do not fail to read all you can as well.

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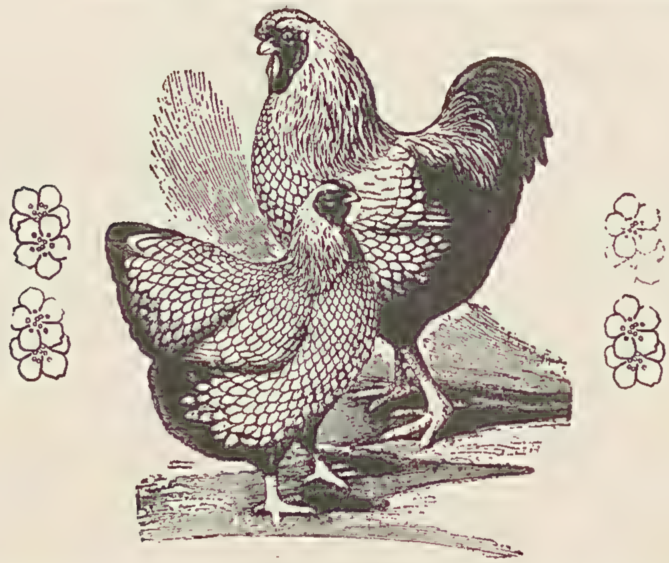

Diseases of Fowls.

(Continued from last issue).

SCROFULA, TUBERCULOSIS, CONSUMPTION. LIVER DISEASE.

In every poultry yard, of whatever size scarcely a season passes but some deaths take place among the adult fowls, and in the majority of instances such are due to the above diseases, all of which are allied by having many symptoms in common, the disease being known to poultry-men by the general term of "going light." Fowls affected usually go about in a listless manner, become thin and emaciated, mope about and ultimately die. When examined they are found to have scarcely an ounce of flesh on them, and this despite the fact that they had a ravenous appetite until death.

Scrofula, in bygone times, was understood to be an affection of the glands of the neck, but at the present time the ailment is looked upon as a form of tuberculois.

Dr Woodroffe Hill, F.R.C.V.S., England, says that in the numerous descriptions of poultry that come to him daily for post mortem examination scrofula and tuberculosis or consumption were more frequently present than any other disease, and although they are one and the same disease, they may exist under different circumstances, scrofula being a disease of the system, of which tuberculosis is the manifestation. The same authority says in-and-in breeding, and the propagation foom diseased stock, are the chief causes and further, that the disease is favoured by every condition which renders the blood unhealthy. Malformations of the chest, defective structure of the lungs, unsuitable nutrition, being all influential in the production of the disease.

Its hereditariness is unquestionable, and therefore it manifests itself most forcibly after in-and-in breeding.

A medical gentleman, a large breeder of poultry, lost the whole of his stock through adopting the latter system, in order to obtain certain points. Tuberculosis is frequently preceded by some previous disease. It may follow roup, and often when cases of roup are cured, consumption or a wasting away follows.

In poultry, scrofulous deposits are sometimes found externally, amongst others being enlarged joints. In some case the scrofula is more pronounced than others, the liver especially inviting the deposit. The organ becomes an enormous size, and is then known as liver disease. In other instances it effects the mesenteric glands and is then known as consumption of the bowels, Fowls so affected have continuous diarrhœa, and waste away rapidly.

In pulmonary tuberculosis the deposit is found chiefly in the lungs in small nodules of a cheesy nature, and in late stages of the disease the whole structure of the lungs is broken down. The treatment should consist largely by way of prevention. Sanitary measures are matters of the greatest importance, clean houses, runs, &c. If there be an inclination to doctor some of the cases in the early stages, tonics are best, while cod-liver oil has been used with good results. For a tonic there is nothing better than the arsenate of iron in pill form, 1 grain twice a day. At the same time, the most competent authorities maintain that birds with tuberculosis are seldom cured by any treatment.

The following article on the above subject was contributed to an English poultry paper some time ago:—"The broadest fact established regarding the exciting cause of tuberculosis deposit is that the domesticated animal is more liable to tubercular disease than the same animal in a wild state. The stabled cow, the penned sheep, the caged lion, tiger, or elephant, are almost invariably cut off by tuberculous affections, no doubt due to deficient ventilation, and the obeyance of normal exercise of the pulmonary functions. Compare the ordinary barnyard fowl with the highly-bred show bird as to vigour, stamina, and freedom from hereditary disease, and the former, generally speaking, shows the cleanest bill of health for this reason: it lives in a more natural condition, is not crammed with artificial food, or dosed with quack nostrums and gets what grit it chooses to find without being supplied with any special form. The ravages of tuberculosis in the human family are too patent to ignore its gravity in the lower creation, and the poultry fancier will best consult his own interests in studiously avoiding breeding from or purchasing birds of scrofulous or tuberculous taint, and in the event of the disease manifesting itself, to dispose of his stock, thoroughly disinfect his ground and after a sufficient interval import fresh and pure blood."

In connection with this and other diseases, we are indebted to the United States and Canada for the many scientific investigations conducted by their Agricultural Departments, in the poultry industry in that country, and perhaps the most exhaustive and important of them all was that conducted at the California Experimental Station two years ago, and published in Bulletin 161, issued by the College of Agriculture, the following being the introduction:—"The importance of the poultry industry in California has occasioned a demand for the investigation of the problems of poultry management. In response, the Legislature appropriated 5,000 dols to be expended by the University of California for this purpose, in the manner indicated in the following:—There is hereby established in the county of Sonoma, at or near the

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city of Petaluma, a poultry experiment station, to be known as the California Poultry Experiment Station. The purpose of said station shall be the study of the diseases of poultry to asertain the causes of such diseases; and to recommend treatment for the prevention and cure of the same, to ascertain the relative value of the poultry foods for the production of flesh, fat, eggs, and feathers, to recommend methods of sanitation, and to conduct investigations for the purpose of securing results conducive to the promotion of the poultry intrests of the State. This Act shall be liberally construed to the end that the station hereby established may at all times contribute to the general knowledge of the public upon the subject of poultry husbandry."

LEG WEAKNESS.

Chickens which are confined on a wooden or stone floor frequently become cramped, and older birds are sometimes attacked with leg weakness, in consequence of having outgrown their strength. Chickens must be changed from wood or stone floor to a run on dry earth ; cramp and leg weakness generally attend attempts to rear chickens in a room or greenhouse. In either case a good rubbing with embrocation will be found efficacious. Good nourishing food is of importance in the case of chickens which have outgrown their strength, and a little bone meal may, with advantage, be added to their ordinary diet.

GAPES.

This disease is caused by the preaence of small worms in the windpipe of the chickens, and can be cured by killing the worms. In advanced cases the difficulty is to kill the worms without killing the chicken also. Carbolic fumes, produced by burning a little carbolic acid in an iron spoon over a candle or small lamp may be tried with aqvantage in the case of single birds. The chicken must be held in such a position that it breathes the carbolic fumes. If many birds are affected the same process may be carried out on a large scale by so arranging a box that the carbolic acid can be burned on an iron saucer in a lower compartment while the chickens are placed in an upper one to which the fumes have access through an open floor. Care must be taken that they are not suffocated. The free use of lime in a coop, the lime being powdered by being slaked, and being stirred up so that the chickens breathe it, is also very advantageous, but here again care must be taken not to suffocate the chickens. A tiny piece of mild mercurial ointment applied to the top of each chicken's head when taken from the nest is a good preventative. Ground used year by year for rearing chickens may beoome tainted, and liable to cause gapes.

SCALY LEG.

This is really an insignificant ailment producing a very unsightly effect, and tedious to cure. It is caused hy a parasitic groath affecting the bird's legs and causing them to assume a more or less swollen and scaly appearance. In bad cases the bird's legs become covered with a chalky groath. In most cases it is caused through standing in wet filthy uncovered fowl pens. But in other case, it seems to be hereditary. The best means of prevention is to keep the fowl pens and runs dry and clean. The most simple and effectual treatment is to take a bowl of kerosene and dip the bird's legs into it a few times at intervals of a day or two. On the fourth day soak the legs in warm water for ten minutes, and some of the growth will then easily rub off, and the natural appearance of the legs may be restored by applying a little vaseline: but a fortnight or three weeks of this treatment will be required to effect a cure.

The Farm.

Ensilage.

By far the cheapest and best way to store fodder is in the form of silage, as, when cured in this way, it retains all the valuable constituents that in the process of converting it into hay are thrown off into the air, its digestibility thus being impaired. Manly Miles, a great American writer on ensilage, says:—" When green grass, or clover, approaching to maturity is first cut down it contains a considerable proportion of starch, sugar, and gum still unchanged into woody fibre, as it would mostly be were the plant allowed to become fully ripe. But when left to dry in the open air and under the influence of light, woody fibre continues to be formed until the plant becomes dry. The effect of this change will obviously be to render the dry hay less digestible on the whole, and consequently less valuable as food than the green grass from which it was prepared. Again, we know that by drying many very digestible and nourishing substances become lsss soluble, and

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The stomach of a growing animal cannot consequently more difficult of digestion. afford the time necessary to the complete digestion of such dry substances, and hence a large portion of the really nutritive matter of their food is rejected in the droppings of animals which are fed upon them." This is a self-evident fact that all must have observed in haymaking—that the stalk becomes hard and woody and less digestible than when in the green state; whereas when made into silage it more closely resembles the plant as growing in the field. We all know that dried fruits, although good and wholesome in their way, are less digestible and do not contain the luscious fruity flavours they had when growing on the tree. But put them whole in a bottle with their own juice, and exclude the air, and they retain the flavours of the original fruit for years. There is the same one great fundamental principle to bear in mind in the making of silage as in the preservation of fruit by canning, and that is the exclusion of air. Every housewife knows that if she does not make her bottle of fruit airtight it will quickly spoil; and it is the same with ensilage—wherever the air can get at it, it goes bad. It stands to reason, therefore, that in making stack ensilage all the outside, which is necessarily exposed to the air, is waste; although even this the stock would pick over in a drought, and if sprinkled over with a little molasses it would help to keep them alive even if they did not thrive upon it. The least wasteful and most effectual way to conserve fodder is in an airtight silo or pit, or a good excavation. I believe that with a properly constructed excavation in the ground one can make good ensilage more cheaply than in any other way. But of course the airtight silo, or pit, or excavation all cost money, which the majority of our dairy farmers cannot afford, and my principal object in this paper is to encourage a regular system of ensilage-making amongst our dairy farmers that is at the same time fairly effectual and is less trouble and worry and expense than haymaking. I shall now endeavour to show that good ensilage can be made in a stack without any artificial pressure, and that it is as simple and easy to make as hay is; in fact, if I had my choice, I would rather make ensilage than hay. Now, we will suppose we are about to make a stack of lucerne ensilage; first of all select a suitable site on the highest piece of ground you can get in the paddock, because if your ensilage is making properly a large quantity of juice will drain away from it, and I have sometimes had to cut drains to let the juice away. Build the stacks round; I find there is more waste in square stacks on account of the corners, and round stacks are easier to build. The size of the stack must be determined by the quantity you are going to make. The larger the stack, the less the waste in proportion. Say you have a 50-ton stack to make; you will want to build it about 18 feet or 20 feet diameter, and as high as you like. A stack that is 20 feet high when finished off will not be more than half that in a few weeks' time, so great is the shrinkage. Be sure and keep the sides of the stack perfectly plumb, not slanting or bulging in the way a haystack is built; if you do not, the stuff is apt to slip when it heats, and your stack will be ruined; in fact, all through the process of making ensilage in stack you proceed on just the opposite lines to what you would in making hay. Cut the lucerne when the stalk is green and sappy, and before the flower comes on. If you let the stalk harden, it will not make such good ensilage. Start the mowing machine as early in the morning as you like, the more dew there is on the lucerne the better; in fact, I find that I always make the best ensilage in muggy, showery weather—just the time when it is impossible to made hay. Then let the rake follow the machine, and the dray follow the rake, and cart into the stack right away. When you knock off at night, all you have cut during the day is safe in the stack, and you can go to bed happy without worrying whether any rain in the morning is going to spoil all the hay you had so nicely cocked up the previous evening, ready for stacking. I never use a thermometer to test the temperature, or bother about the heat. I did all that sort of thing when I first started, and had such an array of ropes and levers for putting on the pressure that I was fairly staggered and disgusted with the work; but all that is now done away with. Never be in a hurry to get your stack done too quickly, but let it settle down well. When the stack gets too high to pitch the stuff on to, knock off for a day or two, and it will settle down several feet; then pile it up again. If you have a large quantity to make, it is a good plan to have two stacks going at the same time, building on them on alternate days. Keep the stack well trodden down as you go on, and let the inside be slightly lower than the outside; then if any slipping takes place it goes towards the centre. When the stack is completed, finish off the top dome shape, cover all over with 6 inches or 7 inches of earth, and let it rip. I have made several good stacks without any earth at all, but I prefer the earth, as it helps to keep the air and rain out, and puts on more pressure. I use a mast and grab-hooks for lifting the stuff on to the stack when it gets high, but a staging will answer. The foregoing remarks apply to making lucerne silage; maize, of course, is much heavier stuff to handle, and the stacks are somewhat difficult to build, as it is such slippery stuff. I have made several stacks of maize, and they have always been successful; they have been square stacks, but if I make another it will be a round one. The maize stalks should all be cut and laid the same way in the field, and brought in that way, and put on the stack the same way, with the butt ends outward. Now, a few remarks as to the feeding value of silage. My experience is that it is not a fattening food, but it is par excellence a cow feed. You do not want to put fat on a dairy cow. I have not tried it with sheep, but I am of opinion that to those who are about to embark in lamb-raising it would be a valuable stand-by in a dry time to keep up the flow of milk in the ewes, and without which we cannot hope to raise good lambs. It is not supposed to take the place of green feed when we have it, but how often are there times when the dairyman is suffering for want of green feed for his cows. Nearly every year there is some period of dryness, and then is the time when the ensilage stack or the silo prove its usefulness. To mention a case in point:—You all know that last winter was the most severe we have had, barring the 1902 drought, since dairying was established as an industry here, and everywhere we heard of people turning their cows out; and yet at Talgai West we kept up the flow of milk all the dry time, with the help of ensilage, to considerably over a gallon a cow average. Manly Miles again says:—"Lucerne silage is superior to lucerne hay on account of its succulence, as well as its higher feeding value."

The last mentioned point is mainly due to the fact that all parts of the clover or lucerne plant are preserved in the silo with a small, unavoidable loss in fermentation; while in haymaking leaves and the finer parts, which contain about two-thirds of the protein compounds, are easily lost by abrasion. Now, this is very self-evident. We all know that one of the greatest difficulties to contend against when making lucerne hay is to preserve the leaf and keep it from falling off, and that the leaf is the most valuable part of it. In making it into silage, all is saved,

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and that is where it comes in that there is six times the feeding in silage that there is in hay; as the writer quoted above says, the leaves contain about two-thirds of the protein compounds. This protein is one of the principal constituents that promotes the formation of milk, and therefore you want to use a food for milch cows that contains a large amount of protein. In conclusion, I may state that there are all sorts of ways of making silage, but I have endeavored in the above remarks to exemplify to you the simplest form in the stack, and to show you that a man should not be debarred from making silage because he has not got a silo and cannot afford to put one up, for I trust I have proved that the best of silage can be made without one, and that it need not cost any more in its manfacture than hay.—Mr. A. Dowling, in "Queensland Agricultural Journal."

The Dairy.

Insanitary Milking Sheds.

If any justification were required of the stringent regulations under the Dairy Acts for the enforcing of cleanliness in milking sheds, it is furnished by the State Veterinarian of Pennsylvania, U.S.A. He placed four healthy and two tuberculous cows in a sanitary dairy building, and four healthy and two tuberculous cows in an unsanitary building. The healthy cows were kept for seventeen months in the place originally assigned to them—except when they were out for exercise—and during this same time the two tuberculous cows of one stable were frequently exchanged with the two tuberculous cows of the other stable. It was arranged that each healthy cow should stand beside an unhealthy one, and, by changing the latter, each healthy cow was exposed to the same amount of danger throughout the experiment. At the end of seventeen months all twelve cattle were killed. It was found that two of the healthy cows of the sanitary stable had developed slight cases of tuberculosis, and all four cows in the unsanitary stable had developed severe cases of tuberculosis. This experiment showed that unsanitary dairy buildings have much to do in aiding the spread of diseases. Leaving aside all considerations save profit, it is in the interest of the dairyman to keep his cows in perfect health.

Dairy Notes.

The dairyman that is making the most money to-day is the dairyman that is reading a great deal and keeping up with the best methods of the times. Information passes from one person to another so slowly by word of mouth that if a man had to depend on that method of getting information he would continue to follow the methods of his ancestors more often than not. If word of mouth is depended on the ancestor had the advantage, and in the past this advantage has led to the young dairyman following in the footsteps of the old dairyman. The dairyman that reads can get out of the ruts, and it is necessary many times to get out of the ruts if money is to be made by means of the cow and her products. In the dairy business the margin between profit and loss is not great, and by a little wrong method the cowkeeper can easily make a loss instead of a gain If losses are continued from year to year it means failure in the end. The farmer that reads seldom fails in the dairy business.

When skim milk is fed to calves, there is something wanting in it, and that something is the butter taken out of the whole milk in the shape of cream. It follows therefore, that this loss must be made up by some supplementary feed. Mixing raw bran or chopped oats with the milk inflicts injury upon the calf by scouring. At from one to three weeks old most calves will eat a mixture of chopped oats, ground linseed, and bran in a dry state. The chewing necessary fits the feed for proper digestion, and prevents all risk of scouring, such as occurs when skim milk is gulped down hurriedly from the feeding pail. It has been conclusively shown that this risk can be avoided by mixing 2 oz. of cod liver oil with each 3 galls. of milk. Calves so fed will never scour, but gain as much as 1·88 lb. in weight daily.

As a rule, cows are milked twice a day —early in the morning and in the afternoon or evening—and it is generally found that the evening's milk is richer in fat than the morning's milk; at the same time the quantity of evening's milk is usually less than the amount of morning's milk. With some cows this variation may be very considerable, whereas other cows yield practically the same amount of butter fat in the two milkings. The milk first drawn from the udder is always poor in fat, and the richness increases towards the end of the milking, and the last strippings are very rich in fat. The milk first drawn has been found to contain only from ½ to 1 per cent. of fat, whereas the strippings may contain as much as 10 per cent. For this reason thorough milking with careful stripping is absolutely necessary in order to attain a maximum amount of butter fat. Altering the hour of milking may seriously interfere with the yield of milk, and the treatment of cows before and after milking and the manner of milking itself have an effect on quality and quantity of the milk. A daily variation in the yield and quality of milk which may be frequently observed, and which in some cases may be very considerable, may be caused by a great many slight disturbances, brought about by changes of food, water, climatic conditions, change of the attendants and milkers, slight sickness, etc. Like in all other variations, the percentage of fat shows the greatest variations, whereas the amount of casein varies within narrow limits, and the amount of milk sugar and ash may be considered as almost constant.

Sterilization means a heating of milk for some time to a temperature of 230 degrees to 240 degrees Fahr., which is best effected by heating with steam under pressure. At that temperature all germs are killed, and milk so treated can be kept for any length of time in a hermetically closed vessel. This treatment of the milk has, however, an influence on the taste, composition, and digestibility of the milk, and for this reason a heating to a lower temperatuse of only 175 to 185 degrees Fahr, called Pasteurisation, is often employed. This heating kills only the bacteria but not the spores of such organisms, and, in order to make the process as effectual as sterilisation, the heating has to be repeated several times. All heating of the milk should be followed by cooling, and the milk should be kept at a temperature under 50 degrees Fahr. to retard the development of spores.

There are at the Wagga Experimental Farm, Riverina, a number of superior young Jerseys (says the 'Agricultural Gazette of N.S.W.'), and as evidence of the ability of this breed of cattle to yield good quantities of rich milk under conditious of small rainfall, the following yields are given :—

	Weeks.	Lb
Hawthorn... ...	56	6,420
Enid	50	5,509
Wonga	55	4,484
Wilga	52	5,904
Doreen	51	5,148
Clover	51	4,094
Joan	51	6,934

All but the last cow are pure-bred Jerseys, and are by the bull Colleen's Golden Lad, who is by Melbourne (imp.), from Colleen (imp.) These are excellent yields for Jersey cows on their first calf, and it proves conclusively that the Melbourne strain of Jerseys is a heavy-milking one. Melbourne, though 13 years old, is still doing dutp at the Berry Stud Farm.

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April Number of 1908

The Australian Gardener

(A Monthly Journal of Floriculture, Horticulture, Agriculture, and Poultry),

CONTAINS—

The Vegetable Garden—
- Operations for the Month

Flower Garden—
- The Tecoma.
- Notes for the Month.
- Plant Notes.
- Orchids.

EDITORIAL.

The Orchard—
- How to Utilise Surplus Orange Crop.
- Drying.
- Pickling Citrus Fruit.

The Dairy—
- Should Cows be Stripped ?
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ANSWERS TO CORRESPONDENTS.

The Poultry Yard—
- Diseases of Fowls : Tuberculosis,
- Roseworthy Egg-laying Competition.
- Poultry Farming.
- What Age for Eggs ?
- Pithy Pars.

THE WISE GARDENER AND HIS SON.

&c , &c., &c.

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ADELAIDE.

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Contributors.

All letters, manuscripts, and matter intended for publication should be addressed to the Adelaide Office, corner of Pirie and Wyatt Streets, Adelaide, and in order to appear in the following issue should be posted to reach Adelaide by the 20th of the current month. It is necessary that correspondents should furnish their names and addresses.

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EDITORIAL

GARDENS have all been carefully prepared, dug, manured, and are now free from weeds ready for planting. What to plant can all be found in our Garden Notes, and how to plant them. The Rose has an article to itself, as it always should have, because it stands alone the Queen. Then the Carnation is dealt with specially, as in popularity it is the only rival to the Rose. Why do not amateur gardeners plant more Bouvardias ? It surely must be the name that puts it out of court. There does not appear to be a 'common or garden' variety of name for Bouvardia. This is a pity, because if it could be familiarised in some way the plant would be appreciated for the beauty of its flowers. Now is the time to plant bulbs, and no garden should be without Daffodils and good ones too. And Verbenas, yes, lovely Verbenas ; how is it they have gone so much out of fashion ? Nobody seems to care for them now. And Fuchsias, too, out of date. All the same we would like to see them come again into fashion, for they can be grown to great beauty. Hardy annuals and perennials must be sown, and those who have had the foresight to get them going early in little boxes and tins will begin planting out.

For the slugs ? Well, the slugs are greedy things and they like savoury morsels. But it is disgustingly disappointing to have your seedlings disappear the night after they are planted out. Try crystals of sulphate of iron about the young plants, not too close on to them, but near enough to burn up the slugs before they come to the plants,

Advice is given about Crotons. Probably nine out of every ten amateur gardeners have never heard of Crotons, but when seen and understood their foliage creates a fascination not easily lost. They are difficult plant to rear, hence their exceptional value, and hence the fact that very few people know anything about them.

An article dealing with Tecomas brings the gardener on to more familiar ground. For trellis work, fences, walls, or roofs of outhouses these climbers are exceptionally beautiful both in foliage and flowers.

The Orchard articles this month deal with the utilisation of surplus orange crops, pickling citrus fruits, and drying. The making of orange wine will be a new production to most growers, but it is worth knowing. Making candied peel is an art that might be learnt with advantage as a by-product, but drying fruit should be made a big concern, as may be readily understood when it is remembered that dried apricots will fetch about £100 a ton in the London market.

Poultry breeders and even the backyard full of hens will do well to read carefully the article on tuberculosis. The poultry notes are full of good advice, and sententious remark is made that a farm without poultry is like a buggy on three wheels.

The Dairy notes contain an argument against the practise of stripping cows. Advice is given upon keeping milk and making cream.

The issue is in keeping with the reputation of THE GARDENER as a sound practical paper.

WE would direct our readers, especially those in the country, attention to Messrs. Foy & Gibson's advertisement on our front page, in which they state that their great show of new autumn goods is now being held. This is a rare chance to secure bargains. Patterns and prices will be sent post free on application.

The Vegetable Garden.

GIANT AUVERGNE CABBAGE.

Operations for the Month.

Cool weather generally sets in during the latter part of April, and we frequently have a good deal of rain; but as long as it is fine it should be advisable to dig up new ground, so as to be prepared for any planting or sowing that may be necessary. Keep the garden quite free from weeds, and take away all old and useless vegetables and remains of vegetables to a rubbish-heap, where they can rot and become useful manure for the garden. If it is thought preferable to burn them, carefully preserve the ashes for spreading over and digging into the ground.

Beans, Broad.—This vegetable may be sown largely from time to time during the month. Johnson's Wonderful and Broad Windsor are both excellent varieties.

Beans, French or Kidney.—Will only succeed in the warmest parts of the State, where frosts are not likely to attack them.

Beet, Red and Silver.—Thin out well the plants which are coming up, and keep the rows free from weeds. It is not advisable to sow any more seed at present.

Borecole or Kale.—A very small quantity of seed may be sown. This is a vegetable hardly worth the growing, for good cabbages are infinitely superior.

Brussels Sprouts, which is a sort of cabbage, is one of the best of that class. A little seed may be sown, and if any young plants are obtainable they should be planted out about 2 feet apart each way.

Cabbage.—Sow seed as largely as may be thought necessary. Plant out, also, any young cabbages that may be available. They should not be pulled out of the seed-bed, but taken up carefully without breaking more roots than can be avoided. Every garden should have a few plants of the red cabbage, which comes in very useful for pickling. If not required for that purpose, it may be eaten in the ordinary way. It should be noted that cabbages are greedy feeders, and need rich soil and abundance of manure.

Cauliflower.—Sow a little seed, and plant out from the seed-bed any strong plants that are large enough to handle. This vegetable should be grown largely, for it is well liked by almost everyone. The ground needs to be well manured, as for cabbage.

Carrot.—Seed may be sown largely. Make the rows about 1 foot apart, and take care not to bury the seed more than half an inch deep. Be careful to weed frequently, for the seed takes a considerable time to come up, and when it does the plants are very fine and tender, and easily destroyed by weeds. Manure had better not be applied, unless it is old and very rotten, as it induces the carrots to become forked and quite spoiled in appearance.

NEW YORK LETTUCE.

Celery.—Plant out a few seedlings into very well manured ground, if any are available.

Endive.—If plants are available, they may be planted out largely. It is a most useful substitute for lettuce when that cannot be grown. A little seed may be sown.

Herbs.—Sow a little seed of any kind it may be wished to grow.

Leek.—Seed may be sown largely, and any plants from previous sowings that are large enough may be planted out. The soil should be heavily manured.

Lettuce.—Sow seed largely, and plant out any young lettuces that are suitable and of sufficient size to handle The roots should not be broken, if possible, when raising the plants from the seed-bed.

Onion.—Opportunity should be taken now to sow a quantity of seed. Sandy loam is the most suitable soil for the plant, Well-rotted manure should be applied in quantity, the land well drained and the surface kept somewhat raised and made clean and fine for the seed. The beds should be narrow, so that they can be easily weeded. It must be kept in mind that weeds have a most damaging effect on young onion plants, and should never be allowed to grow and attain any size. The seed should be sown in drills, which should be about 1 foot apart. Care must be taken not to bury the seed deep

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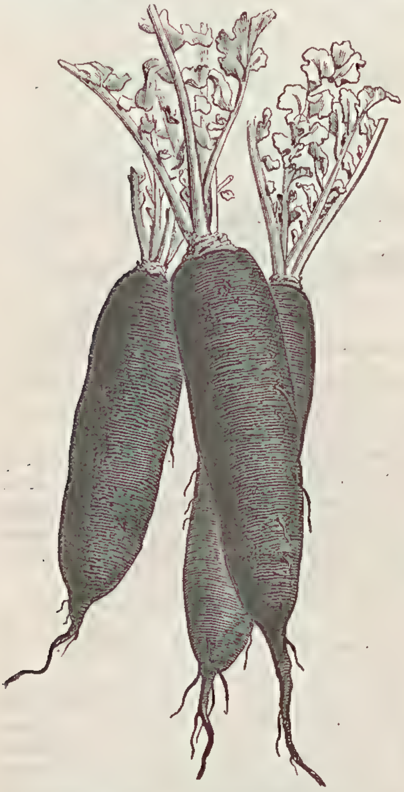
—indeed, it should be little more than pressed into the soil. Sow thin, unless small onions are required.

Parsley.—Sow a small quantity of seed, in order to keep up a supply of plants.

Parsnip.—Sow a few short rows. The ground should be dug deep, as the roots will extend to a great depth if the soil is free and open.



LONG BLACK SPANISH RADISH.

Peas.—Take the opportunity to sow largely of this general favorite in rows about 3 feet apart. Cover the seed with soil to a depth not greater than 3 inches. The peas should be sown in the drills about 3 inches apart. For manure, use well-rotted droppings from farm animals. Lime, especially sulphate of lime or gypsum, will be found useful. Potash and superphosphate of lime are good manures to use.

Radish.—Keep on sowing a very little seed from time to time, and root out all old tough plants. Use plenty of well-rotted manure.

LONG WHITE STRASBURG RADISH.

Spinach.—A little seed may be sown occasionally during the month. Sow in rows about 18 inches apart, and thin out the young plants well when they come up. Use well-rotted manure freely.

Shallots.—Plant out a few bulbs, but do not set them deep in the ground. They should stand about a foot or so apart each way. Whatever distance you may think best keep to it, or else everything will have a most unsatisfactory appearance, and be awkward to work. A line should be used on every occasion.

EARLY STONE TURNIP.

INTERESTING TO FARMERS AND MANUFACTURERS.

The attention of our readers is directed to an advertisement in this issue re 'Weldarine,' a new compound for which Messrs John Reid & Sons, Ltd., of Gresham-street, Adelaide, are sole agents. Every one using mochinery knows the losses that arise owing to delay in the case of breakages. With 'Weldarine' the farmer is able to effect his own repairs, thereby saving not only money but what is more important, time. 'Weldarine' is quite easy to operate, and is absolutely guaranteed to weld cast iron. Its many usos will be so obvious that we feel sure we ought to have brought it under the notice of our readers.

The Wise Gardener and His Son.

My son, attend unto the voice of thy father, and forget not his words, that it may be well with thee, and that thy garden may blossom as Eden and thy trees bend with fruit.

Beware, O my son, of the jobbing gardener, for what is he but a delusion of the multitude, and a sore snare unto them that put their trust in him?

He prepareth his ground in the autumn as one that looketh for the summer heat, and breaketh up the clods thereof, for he regardeth not times nor seasons.

He blunteth his knife upon the whetstone, and saith, 'Now will I prune the trees of the field.' He goeth forth as an army of locusts, and after him remaineth not any green thing.

As a lion among the flocks, so raveneth he among the choice seedlings. He plucketh them up by the roots, saying 'Are they not weeds?'

He poureth strong manure upon the tender plant, and lo! it is not Then saith he, 'Surely some evil beast hath devoured it.'

The tender plant fadeth for lack of moisture, and there shall none be given it. Yes, the flower pot shall become a dust-heap, and the inhabitant thereof as ashes.

Again, he maketh the flower pot a standing water, and the rock plant as one that dwelleth in the marshes.

Let a hurricane from the north fall upon thy borders rather than the jobbing gardener in his zeal. He is more to be feared than seven spring frosts.

Be wise now, therefore, O my son, and flee thou from the jobbing gardener, for he hath destroyed many gardens.—Wellington (N.Z.) Mail.

Slugs.—M. H. du Buysson, as cited in the 'Moniteur du Jardinier,' speaks very highly of the use of sulphate of iron, green vitriol. The crystals are scattered freely on the soil, The result is that the slugs are annihilated and the plants uninjured.

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The Flower Garden.

The Tecoma.

[By J. Cronin.]

Tecoma is a genus of evergreen and deciduous climbing plants, many of which are excellent subjects for the garden. The tecoma is found native in many parts of the globe, several species being indigenous to Australia. It is closely allied to Bignonia, a genus containing some of the finest climbing plants in cultivation, and at present many kinds are described in nurserymen's catalogues as synonymous with Bignonia. The flowers of most of the species are produced during summer and are a feature in many gardens. They are borne in large bunches, the individual flowers being large and tubular in form, and the color of many kinds bright orange or yellow.

The climbing kinds are useful in mixed shrubberies or borders and are particularly effective when trained on walls or fences. The usual plan adopted is to treat the deciduous kinds as pillar plants and the larger growing as plants to cover a trellis or to mingle with the growth of trees. The shrubs are evergreen and although few in number are among the most suitable for small garden borders. They are sufficiently hardy to endure the conditions generally obtaining in cottage or villa gardens, and are bright and effective for several weeks of summer.

Florists have not effected much improvement with the tecoma, few hybrids of value being noted. One of the best of these is Tecoma Smithii, a variety raised in South Australia, and generally considered to be one of the finest garden shrubs extant.

The most suitable soil is a light loam, but in this respect the tecomas—or most of them—are accommodating, thriving satisfactorily in any fair garden soil. Fine specimens may be seen in the metropolitan district, growing in soils varying from a light sandy to a heavy stiff, clay loam Like most of our cultivated plants they fail under sour soil conditions, requiring a drained and sweet soil, even if poor and rather dry, to produce satisfactory specimens. In poor soils well rotted stable manure should be incorporated to a depth of eighteen inches, but hot forcing manures should not be used when setting out young plants.

The autumn is the best time to plant the evergreen kinds from pots, affording the plants an opportunity of being established before the hot and dry weather sets in. In districts where severe frosts is the rule, late spring planting is best, especially for the grandiflora varieties The young plants will require to be watered and tended until established, when they will endure severe conditions without suffering very greatly. Deciduous kinds are often grown in the open ground by nurserymen. Any removal direct to the permanent positions for such kinds should be carried out in the dormant season.

Tecomas are propagated from cuttings of the matured growths, from roots of certain kinds—radicans and its varieties for example—and from seeds. Some kinds strike readily in winter from cuttings of the matured growths treated in the same manner as rose cuttings, i.e., taken with a "heel" and inserted firmly in sandy soil in the open ground, while cuttings of others difficult to "strike" in the open are grafted on roots of the free growing kinds. Most of the tecomas can be readily increased by layering the branchlets, a mode of propagation frequently adopted by nurserymen. Plants are easily raised from seed if available, this being the usual means of raising T. Smithii, a variety which produces seed freely.

The kinds and varieties most worthy of cultivation that are obtainable here include:—Capeusis grandiflora, radicans, jasminioides, stans, Guilfoylei, Madame Galen, Manglesii, and Smithii.—Journal of Agriculture, Victoria.

Notes for the Month.

The greatest favourite amongst the flowers is, beyond all doubt, the Rose, and no garden can be complete without a few good kinds. There are numerous classes of Roses, some well defined, others difficult to define. but as a rule they can be fairly well distinguished. The classes more generally known are the Hybrid perpetual, the Tea-scented, the Hybrid tea-scented, the Bourbon, the Noisette, the Polyanthus, the Damask, French or Gallica, and the Banksian. Of these the best for general purposes are the Tea and Hybrid tea-scented. They blossom with wonderful profusion, and are exceedingly

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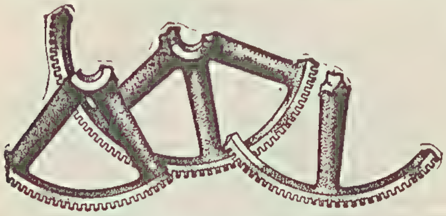

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beautiful. They will continue in bloom in most parts of the State for the greater part of the year. The Hybrid perpetuals flower chiefly in the spring and again to some extent in the autumn. The flowers are brilliant, large, and good, and, as a rule, much darker flowers can be obtained amongst them than amongst the teas. A list of some of the best of the various classes will be given to enable any one to give an order to a nurseryman. They will cost from about 1s. 6d. to 2s. each. Of tea and hybrid-teas some of the best and most useful are:—Comtesse de la Bathe, Countess of Pembroke, Climbing Devoniensis (a very strong grower), Etoile de Lyon, Grace Darling, Hon. Edith Gifford, La France, Lord Tarquin, Madame de Watteville, Madame Camille, Madame Hippolyte Jamain (one of the best), Madame Berard, Marie von Houtte (perhaps the best for general purposes), Climbing Niphetos (a beautiful white), Souvenir d'Elsie Vardon, Saffrano (an old but useful variety), The Bride (an exceedingly beautiful one), and The Meteor. Of the Bourbon class the old Souvenir de la Malmaison is one of the best roses in cultivation, and one of the most constant to produce flowers. Mention should have been made of the hybrid tea climbers, which are very beautiful and useful:—Reine Marie Henriette, Souvenir de Madame Metral, and William Allan Richardson. Some of the best hybrid perpetuals are:—Alfred Colomb, Beauty of Waltham, Captain Christy, Charles Lefebvre, Duke of Edinburgh, Earl of Dufferin, General Jacqueminot, Her Majesty, John Hopper, Mrs. John Laing, Paul Dupuy, Pierre Notting, Paul Verdier. Of the Noisettes:—Lamarque, Marechal Niell, Celine Forestier, Cloth of Gold, and Reverend T. C. Cole. The above are all good roses, and there are numbers and numbers of others perhaps equally useful and beautiful.

DOUCLE CORNFLOWER.

Now the ground should be in good heart for roses, for, although they will adapt themselves to some extent to a varfety of conditions and will endure a great deal of ill-treatment and neglect, it is not possible to obtain the most satisfactory flowers unless the plants are well treated. The best manure to use is a mixture of the droppings of farm animals, including the pig. If these be well rotted together and applied to the roses the flowers should be excellent, and the pleasure to be derived from their cultivation will be exceedingly great. The situation for roses should be open, but well sheltered, for they do not like strong bleak winds. The tea-scented varieties can be planted at any time, preferably before the winter sets in, or else towards the spring. The hybrid perpetuals towards the winter. When planting make holes large enough to enable you to spread out the roots. Trim all broken and bruised roots with a sharp knife, and then plant carefully, shaking the soil well amongst tha roots, and when well filled in, press firmly with the feet. In case the plants are at all shrivelled up when received, unloose the bundle and bury the whole, roots and branches, in some moist soil for a day or two, and if not too far gone they will quite recover. If the soil be very dry when planting give a gallon or two of water to each plant when the hole has been half filled with soil.

The carnation is another most desirable and easy plant to grow, besides being a great favorite with everyone. The best carnations to plant are those known as the Perpetual Flowering or Tree Carnations. These bear flowers very often during the year. The plants will need attention in tying up to stakes, and they must net be allowed to suffer from drought. If plants can be obtained they may be planted out during the month. Bouvardias are most beautiful and useful flowering plants, which may be planted out this month in all but the coldest districts. They will do well in any soil.

Spring flowering bulbs, including daffodils, should be planted as soon as possible.

Cuttings of roses, fuchsias, verbenas, carnations, and many other kinds of

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plants should be put in without delay, and they will probably strike root very soon, but they had better not be moved and planted for some time to come. The more sandy the soil the better for the cuttings, which should be protected to some extent from the sun, but they must not be shaded too much.

Seeds of all kinds of hardy annuals may be sown now, and the sooner the better, so that the seedlings can be planted out before the winter sets in. Good seed of annuals and perennials can be obtained so cheap that for a very small sum of money a most beautiful collection of flowers can be obtained. Some care is necessary in sowing the seed, and in the rearing of the seedlings, but a little attention and practice will soon enable anyone to become successful.

Flowers can be so easily grown that there is no excuse for anyone to be without a few. The best way to raise plants from seed is to sow in boxes or pots, or even old kerosene tins or jam tins, but these boves or tins must have holes knocked in the bottoms to allow surplus water to drain through. Before putting soil in these boxes, etc., be sure to put in some drainage matrrial, such as broken-up bricks, charcoal, small bones, etc., say an inch or two deep, and then fill up with soil of a light friable nature. Be extremely careful not to sow any seed deep; very fine seed should be hardly covered at all—merely a little fine soil sprinkled over it, and this should be pressed down lightly. Before sowing seed it would be advisable to water the soil well, and then to let it stand for a short time to settle down. Sow thinly, and do not waste seed. The chances are that a good deal of the seed you sow will not come up.

WHITE SCABIOUS.

Sow seeds of the following different kinds of annuals and perennials, and after the seedlings have grown to a height of an inch or so they may be planted in the garden carefully: Snapdragons of varieties, columbines, everlastings, dwarf asters, daisies, coreopsis, campanulas, candytuft of varieties, Canterbury bells, cornflowers, cowslip, larkspur, escholtzia, everlasting peas, forget-me-not, gaillardia, godetia, holyhock, lavender, lupins, marigold, stocks, mignonette, dwarf nasturtium, love-in a-mist, pansy of varieties, sweet peas, pentstemon, phlox Drummondii, polyanthus, scabious, sweet William, and wallflower. These are some of the easiest, and some of the prettiest, plants to grow.

Plant Notes.

Gypsophila paniculata.—There are many useful plants that as such are either unknown to some florists, or that, by reason of their apparant commonness, appear to them so unimportant they give them little attention, whereas if they were grown once they would always find a place on a grower's premises. Prominent among such plants is Gypsophila paniculata. To the retail florist, who many a time has occasion for the hurried gathering and formation of an attractive bunch of outdoor flowers, the graceful blossoms and stems of this charming plant will be of much use and a source of pleasure to the recipient. This is a hardy plant and can be used with satisfactory results for border planting and rock work, as well as for cutting. Seed should be sown now in shallow pans or boxes. When the little plants are fit to be conveniently handled they should be potted up and kept growing for some time, when they may be planted in the open ground.

Some of the eupatoriums are useful; if a good type of purpureum can be got it makes an imposing plant in the border, and ageratoides is very fine with its white flowers.

Hypericums.—The half shrubby nature of many hypericums has called for their use in many situations where partial shade exists and where something of the nature of these plants is wanted, such, for instance, as the borders of woods or under trees and like places. Hypericums patulum, Moserianum and calycinum are examples in this class; and wherever tried in the way indicated they have proved very satisfactory. Some of them are nearly half creeping, and when under trees which shed their leaves on them in autumn, they are nearly evergreen, some quite so. Then how well the taller growing shrub sorts fit in with a lot of shrubs! Their general compact, upright growth and their handsome yellow blossoms—all have flowers of this color—contrast well with the blooms of other shrubs, for not many other yellow-flowered shrubs are blooming when the hypericums are, in midsummer. H. prolificum has good sized yellow flowers, but not as large as those of aureum, which are particularly large and showy; and even H. densiflorum is worthy of a place in collections, for though its flowers are small they are quite numerous, it being well named densiflorum. The half shrubby sorts of hypericums can be increased by division of the plants, as they increase by spreading, to some extent; but the shrub kinds do not The seeds of hypericum are of dust like appearance, so that great care is required when attempting to grow them from seeds, but from green cuttings in summer full success may be looked for.

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Forcing Lilac Plants with Warm Water.—A new method of getting lilac plants into bloom in quick time is given in 'Die Gartenwelt' of Dec. 14, 1907, which when better understood will take the place of etherisation. An example of the variety, Marie Legraye, that at the beginning of November was immersed in water for ten hours at a temperature of 95 degrees Fahrenheit, flowered in three weeks. Plants that were immersed for the same length of time in water at a temperature of 113 Fahrenheit showed, when taken out, a browning of the bud envelopes, developed slower at the first than the first-namtd plants, but came on rapidly when the pots were stood in a temperature of 95 degrees Fahrenheit, whilst a water warmth of 77 degrees Fahrenheit exerted no influence whatever on another plant subjected to it, as regarded its ability to force. It appears that for forcing purposes the most suitable temperature of the water lies between 95 and 113 degrees Fahrenheit, and that there is no necessity to keep to any special degree of warmth within this range. Etherisation of Marie Legraye did not prove so quick in action on the plants as the warm water method, but it had a great advantage over plants not specially prepared. The warm water exerted even greater influence on early blooming in the case of the variety Charles X.

Propagating Crotons. — Everybody understands the necessity of bottom heat in the rooting of hard-wooded plants such as crotons, but beginners may not be equally aware that in like degree heat is required to aid these plants in their endeavour to establish themselves in the soil in which they have been potted, when sufficiently rooted for that operation. Very often a great many cuttings that have been successfully rooted succumb very soon after being potted, when they are placed on a light, airy bench where neither sufficient moisture nor bottom heat was available for the stimulation of increased root action and the retention of foliage. All tender plants on being potted out of the cutting bench are more likely to thrive without check if they are, when potted, placed over a gentle bottom heat and sufficient shade afforded them until they are fairly well established. An ideal method of procedure is to put them in an enclosed glass case, or frame, until they are in such a condition that they will proceed to grow without fear of injury. When crotons are needed for outdoor bedding, the stock from which cuttings have been taken can be utilised for filling in, if there is a likelihood of scarcity of plants for that purpose. Mossing the tops of crotons is a satisfactory method of obtaining well-furnished specimen plants without having to wait for like results from rooted cuttings. There should be no undue haste in severing the tops.

Care of Seeds and Seedlings.—When seeds germinate readily and uniformly it is to be regarded a testimonial to the seed firm's rectitude rather than to the skill of the grower. All good seeds, if conditions of moisture and temperature are right, will sprout anywhere, however placed. But when these sprouts are destined to develop into good plants more is required for the attainment of success with seeds. If the firming of soil in the potting of plants is considered essential for the promotion of a vigorous normal growth, it is a point of still greater importance in the starting of seeds. After the boxes are filled with the soil and this is levelled so as to form an even, smooth surface, sow the seed, care being had to scatter it evenly and not too thickly, and then with a piece of smooth wood, heavy and expressly made for the purpose, press all down quite firmly, so that after this is done the surface is again perfectly even and smooth but over half an inch lower than before. Now the box is watered and if this is done with any sort of care not a grain of even the smallest kind of seeds will be displaced, pressed into the soil as it is by the stream issuing from the rose of a properly made watering can. This is a way of doing that for a quarter of a century has never missed success in the raising of seedlings from good seeds. All the many failures with seeds are owing more to faultiness in doing things right at the outset than to bad seeds, wrong kind of soil or after treatment.

Orchids.

In commencing to get together a collection of orchids, the beginner will do well to start with the varieties that find thier natiue habitat in Queensland. The purple varieties from North Queensland are fairly common in Brisbane, yet how few people make them do well. I saw some quite recently on a friend's verandah post—upside down, tied loosely, and in such a position that they never got any moisture from dew or rain. Little wonder that they did not succeed with him. The two purple varieties referred to are Dendrobium bigibbum and Dendrobium phalænopsis. They are obtainable at Cooktown and other far northern ports very cheaply, and if given an easterly aspect, with shelter from our westerly winds, they do remarkably well. They can be grown on frangipanni or other trees, but do equally well on hardwood blocks, provided a little peat or moss is attached firmly to them with copper wire. In fixing on the plants see that they are firmly tied, otherwise the young roots may be injured should the plants sway about. During the warm weather, when the plants are growing, they should be watered daily. After they have bloomed (which is in the autumn) water should be gradually withheld, and during the winter, which is their resting seoson, very little water should be given—just sufficient, in fact, to prevent shrivelling. Another lovely purple orchid from the far north is Dendrobium superbiens, but this is not so plentiful nor so cheap as the other varieties. Dendrobium undulatum is fairly plentiful about the Cairns district, and does splendidly around Brisbane outside. It has a robust habit, the stems or pseudo bulbs attaining a height of 8 or 10 feet. The flowers, which vary a lot, are in color of various shades of a beautiful golden brown, and, as the name indicates, are very much twisted and crinkled. This variety throws a fine spray of flowers, bearing up to twenty on a flower spike, and is an excellent variety for ladies' sprays. It should be given plenty of moisture and sunshine. If grown in a shady bush-house, it does not flower freely. Dendrobium canaliculatum, so named on account of the canal-shaped leaf, has a pseudo bulb not unlike an onion. It is fairly plentiful in the Mackay district, where it grows on the ti-trees—particular on the sea-shore—exposed to the sun. It has a lovely flower, white with a prettily marked purple and orange lip, and has a very sweet perfume. This should be given a sunny position also. Dendrobium Kingianum is another favorite orchid with beginners. It is obtainable on most of the mountains near Brisbane, but more particularly on the Main Range. It grows on moss-covered rocks, and during the spring months its beautiful pale-pink, dark-pink, and light-purple flowers are a sight worth beholding. It likes a shady position, and grows

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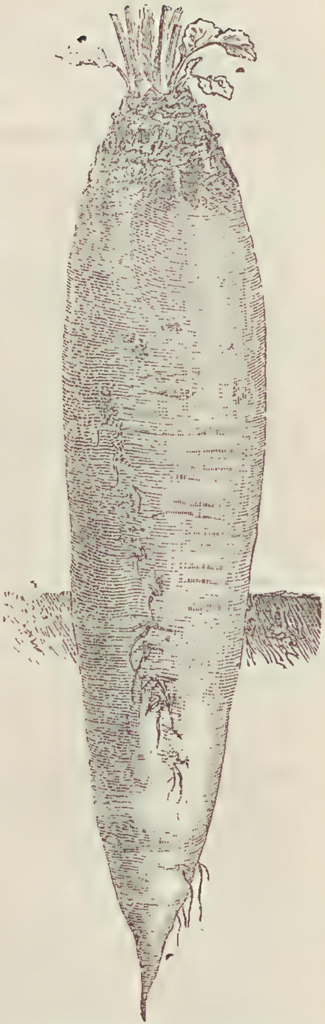
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well in a basket with good drainage and a little peat or moss over its roots. Dendrobium delicatum is a fine variety, having a habit something like Kingianum, though the flowers are larger and open out better. It has beautiful large sprays of creamy white flowers, and possesses a very fragrant perfume. It is one of the finest of Queensland orchids, and is getting very scarce. It grows on the Main Range, near Toowoomba. It likes a shady position, and should be given similar treatment to Kangianum.

Sazcochilus cecilliæ is another little favorite with beginners. It has light-pink flowers, is very floriferous, and possesses a distinct and pleasant scent. It grows naturally on moss-covered rocks, but does equally well in cultivation on trees or in pans containing plenty of broken crocks with a layer of sphagnum or other moss over its roots. Writer sent home to England a clump of this variety, and though the flower is small it is much prized by the friend who received it.

All the foregoing are Epiphytes—*i.e.*, plants which grow upon trees– but some of the terrestrial kinds are worth inclusion in any collection.

Calanthe veratrifolia has pretty snow-white flowers, and makes a nice display in summer. A case of this variety was sent to England some years ago, and arrived in full bloom. It was sent to a flower show on the Continent, and was awardad a silver medal by the judges as an exhibit of exceptional merit. Phaius grandifolius and Phaius Bernaysii also do well, and have much bolder flowers than the Calenthe named. They require a shady position, and, having fleshy roots like the Calanthes, should be grown in a compost of fibrous peat, sand, and light loam, with plenty of good drainage.

The foregoing varieties do not embrace all that are available in Queensland, but are sufficient for this article. Should the beginner wish to add a few of the imported kinds it can be done at very little cost, and, as the varieties I shall name are hardy, with practically very little risk of loss. Dendrobium nobile is one of the greatest favorites, and it does well in an ordinary bush-house. During the warm weather, when in a growing state, plenty of moisture is required. After the growths have matured, withhold water and give only sufficient to prevent shrivelling. The winter is the resting season, and, unless the plants get a decided rest to harden their growths or pseudo bulbs, few if any flowers will be given in the spring. Small plants can be imported from about 2s. 6d. each upwards. A plant of Nobile recently flowered in Brisbane with 502 blooms, a record that it is possible has not been exceeded in any part of the world. I mention this to show how suitable our climate is for some orchids provided the proper treatment is given shem.

Dendrobium Thrysiflorum is another hardy variety. It is not deciduous, however, so does not relish the drying in spring that Nobile can. It must not be allowed to shrivel or lose its leaves, otherwise a certain amount of natural strength in the plant will be lost. Its lovely tresses of white and orange flowers makes it a good variety for showing. Dendrobium densiflorum and Farmeri are two other fine varieties of the evergreen habit, which do remarkably well here under osdinary bush-house conditions. They, too, have beautiful tresses of orange and white and yellow respectively, and, like Thrysiflorum, are fine show varieties. Dendrobium wardianum possesses a truly noble flower of great substance. It is a waxy white, tipped with amethyst purple. The throat is ochre yellow, with two dark sanguineous blotches at the base. Like Nobile, is another variety which does remarkably well here. Cattleya labiata is another variety which does remarkably well here. It is one of the grandest of all orchids, and hails from Brazil. There are many shades of this beautiful orchid, from a blush rose to a deep rosy purple. It flowers in sheaths of four or five flowers to a pseudo bulb, each flower measuring up to 8 inches across when fully expanded. The throat is usually marked with yellow, and the lip from a light shade to a very dark purple, and some varieties have a beautifully fringed and wavy lip. Cattleya Trianæ resembles the foregoing somewhat, likewise Cattleya Mossiæ, and some splendid specimens are to be seen among local growers. There are quite a number of other popular sorts in the Cattleya section well worth the attention of beginners, but I must be brief, so I shall pass them on this occasion, but cannot omit Cattleya Harrisoni, which throws sheaths with several flowers varying in shade from lilac to dark magenta, with a yellow and well-shaped lip. It is another hardy inexpensive sort, which thrives and blooms well here.

The slipper orchids, which are called Cypripediums, possess a form peculiar and interesting by reason of the extraordinary shape and structure of the flowers. The upper or dorsal sepal is usually large, and the brightest feature of the flower, while the lip or labellum takes the form of a slipper-shaped bag. This family of orchids is terrestrial in habit, and possesses no pseudo bulbs, the flower spike being produced from the centre of the leaves, which in many species are beautifully mottled. Cypripediums require a compost of fibrous peat, sand and leaf mould, and a moist, shady position, and do not need the rest necessary with some of the species named. Cypripedium, Barbatum, Insigne, Callosum, Exul, Lawrencianum, Spicerianum, Venustum, and Villosum are all doing well in the local collections, so that fact, combined with their cheapness, warrants my recommending them as suitable for beginners. Lælia anceps is another fairly hardy orchid that does splendidly when once established. It blooms in late autumn when flowers are scarce. It comes from Mexico, and likes outside treatment. The flowers are variable, and are borne on tall spikes of five or six flowers of a rose color, the lip being crimson purple, with yellow and red stripes.

There are, of course, hundreds of other orchids which I could include in this article, but the foregoing is sufficient to enable beginners to get together a collection which will comprise many beautiful and hardy sorts that will well repay them for the little attention required in the way of watering and other attentions during their growing seasons.

Frequently one reads of fabulous prices being given for orchids, and this more often leads the uninitiated to suppose that the extreme loveliness of the flowers borne by the plants purchased is the reason for the high value. In rare cases this may be so, but it is generally the

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rarity of the plant that commands the price, and it is possible a lover of flowers not versed in orchids, if offered the choice of a 500-guinea plant or one sold usually for half a crown, might choose the latter as the more beautiful of the two.

In potting or basketing orchids care should be taken that the eyes of the plant are not covered. They are always at the base of the previous year's growth, and it is of vital importance that the potting material does not cover them. Fill the receptacle partly with broken crocks, cover this with some moss or similar material to prevent the compost from clogging the drainage; then add the compost, and see that the orchid is potted firmly and staked so that it is fairly rigid. If any of the roots are dead or broken it is better to sever them with a sharp knife. See that the roots are not bruised or broken in any way when potting, and above all do not over-pot. Orchids, as a rule, do better in small receptacles than in large ones. To a beginner this may be difficult to understand, but it is a fact worth remembering. Do not allow the compost to become wet or sour, or the plants will not thrive and be attacked by disease. Orchids are lovers of light and air, consequently ventilation is necessary, and our open bush-houses suit most kinds admirably, provided the plants are not placed in droughty positions. Even the varieties that are shade-loving require light, though not direct sunshine, for they will not thrive in a dark corner. All like a moist atmosphere when in a growing state. Their life is sustained by the moisture they obtain from the air, so that the surroundings should always be kept damp when the plants are in full vigor of growth.

In purchasing the imported plants be guided by a friend who has had some experience, or you may import some varieties that require a cool-house treatment, and consequently will not stand our summer temperature. Other varieties will not live in a temperature lower than 40 degs. unless protected by a hothouse. If not inclined to invest in the latter, it would be better to avoid disappointment by leaving them out of your collection meanwhile. Get your little collection together, observe their habits, and give the plants the prescribed treatment. If they are slow in starting, change their position, and you may get a pleasant surprise. A poultry farmer would meet with little success if he bundled his Buff Orpington fowls into the duck-pond with the Indian Runners, and it is the horse sense that would avoid such a silly mistake that will keep an enthusiastic and interested orchid-grower from failing with his orchid treasures.—Mr. E. J. Beard, in the 'Queensland Agricultural Journal.'

The Orchard.

How to Utilise the Surplus Orange Crop.

[By M. Blunno, in 'Agricultural Gazette of N.S.W.']

There are no certain data as to how many oranges are required to obtain 100 gallons of juice. It is evident that it depends on the size of the fruit, thickness of the peel, on the variety, on the season, and on the pressure required in squeezing the fruit. The vessels and utensils required are :—One vat in which to ferment the juice, about 50 gallons capacity; two casks of 100 galls. capacity each (one cask is filled with the orange wine, the other is a spare one, in which the wine is racked, so that it is exchanged from one vessel into another at certain periods); a few demijohns and jars; a small hand-press.

To make 100 gallons of orange wine, an equal quantity of orange juice is obtained from as many fruit as required; to this 300 lb. of cane sugar is added; the whole is well stirred until the sugar is completely dissolved. The following ingredients are also added, and well mixed, viz. :—

6 oz. of ammonia phosphate (at 3s. per lb.)
1 oz of common salt.
1 lb. of cream of tartar (1s. per lb.)
10 lb. fresh wine lees, or 8 oz. beer yeast.

Mix everything thoroughly in the juice, throw a sheet or blanket over the vat, which should be placed in a cool room in a corner out of reach of the sun.

It is important that the juice be extracted from the fruit as rapidly as possible. The oranges are split in halves and quickly squeezed; a small press, all of wood—without iron fittings—would help very much, but care should be taken not to exercise a very strong pressure.

Fermentation will gradually set in, and when this is completed and the juice is quite still, it is racked off and stored in one of the casks, leaving an ullage of 5 or 6 gallons, which are put in demijohns. An hydraulic bung is put in the bunghole, so as to allow the escape of any residual carbonic acid. When the water in the hydraulic bung has ceased from bubbling, the ullage is filled, and the cask bunged tight.

The cost of making 100 gallons of orange wine will amount to about £10, including labor. Naturally, the outlay is not included in this estimate, and the outlay would be about £20 for the purchase of vat, casks, a small press, etc. A great saving might be effected by purchasing second-hand vessels—good clean casks that have served to store wine, brandy, whisky, sherry, or port can be safely used.

The orange wine so made is an intoxicant, and a person would not be authorised to sell it without first obtaining a license.

Drying.

The subject of fruit-drying is a most important one to all orchardists, as hitherto the grower has been content to market his fruit in the fresh state, and has had to take what prices he could get, which were often very low, and in many

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instances scarcely paid the freight and marketing. In a State like this, with every advantage of climate, there is no necessity for the grower to plod along in the old lines laid down by his father and grandfather before him, content with whatever he can get for his fruit, and satisfied that so long as it is a peach, or a pear, or an apple, or an apricot, as the case may be, that one variety is as good as another. Let him ascertain which are the best varieties for their respective purposes. These are good for dessert: well, plant as many as he thinks he can dispose of in that way; those are good for export: well, plant a certain number for that purpose, and for the rest of his trees plant such fruits as can be dried.

It is significant of the little attention which the subject of fruit-drying has received that we are dependent on other countries to a great extent for our dried fruits. This ought not to be where there are so many thousands of acres admirably adapted for raising fruits suitable for drying, as well as the climate necessary for producing the best dried fruits; in fact, in many of the interior districts the climate is so well adapted for fruit-drying, owing to the absence of fogs and moisture in the air, that the drying process could go on day and night. This lessens the chance of the moths depositing their eggs in the fruit, as it is not exposed for so long a time, and has also this advantage: that the fruit drying quickly, the trays can be emptied sooner than they could be in moister or cooler climates, and this enables the grower to handle a large crop with fewer trays—a great consideration to all orchardists.

Great care must be taken in the selection of trees, keeping in view the necessity for choosing such as produce the best drying fruits—that is, for color and size, and such as will lose the least weight in drying; one of the objects—in fact, the main object—being to produce a dried fruit of good size, and bright, clear color, which, when graded and properly packed, will present the most attractive appearance.

The previous remarks apply mostly to sun-drying; but, in districts where this is not practicable, good results may be obtained by drying in the evaporator, and where this process is used it has the advantage that, with careful handling after the fruit is dried, there is very little risk of the fruit becoming infested with moths.

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Self-measurement forms on application.

Pickling Citrus Fruit.

The pickling of citrus fruit peels, or of the citrus fruit themselves, to be afterwards used to prepare candies, is carried out as follows:—

The pickle used is salt and water, viz., a solution of 12½ lb. of salt in 10 gallons of water. One of the heads of a cask of 100 gallons is removed and the vessel is filled with peels, or with the citrus fruits split in halves. The pickle is poured on them until the vessel is full to the brim, then the head that was removed is put back. The cask will gradually get in ullage, through evaporation, therefore more brine is added through the bung, so as to keep the cask always quite full.

In this condition they will keep for a long time, and can even be shipped to distant countries.

The Prosperity of South Australia assured.—Important to those interested in land properties.—Messrs. Saunders and Ashby, land agents, Royal Exchange, King William street, Adelaide, according to list, have some splendid cheap land properties in every suburb. We would advise those who are on the look out for real bargains in land under fruit or otherwise to call at once on Messrs. Saunders & Ashby, who have allotments in every district at very cheap prices and on favorable conditions. Messrs. Saunders & Ashby, who are licensed land brokers, etc., are well and favorably known to buyers and sellers of land allotments throughout this State and elsewhere.

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The Rose.

Would Love appoint some flower to reign
In matchless beauty on the plain,
The rose (mankind will all agree),
The rose the queen of flowers should be,
The pride of plants, the grace of bowers,
The blush of meads, the eye of flowers;
Its beauties charm the gods above;
Its fragrance is the breath of love;
Its foliage wantons in the air
Luxuriant, like the flowing hair;
It shines in blooming splendour gay,
While zephyrs on its bosom play.

—Sappho, about 600 B.C. (Fawke's Translation), from 'One and All Gardening.'

Protection from the Fruit Fly.—The 'Producer's Review' says that a bed of parsley planted in the neighbourhood of fruit trees will attract thousands of fruit flies. So great is the attraction said to be to the flies that they will not go near the fruit, but lay their eggs among the parsley. This is worthy of a trial. We know that if cattle infested with ticks are allowed to run in a lucerne field, the ticks abandon the cattle. Why they do so does not appear. Can it be possible that for some occult reason the fruit fly will in like manner abandon the practice of laying eggs in fruit when parsley beds can be found for them?

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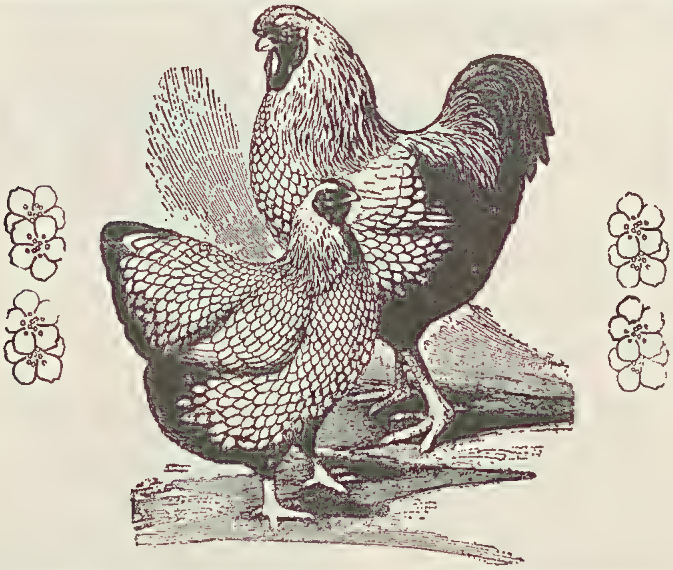
The Poultry Yard.



Diseases of Fowls.

(Continued from last issue).

TUBERCULOSIS

Observations during the past year have demonstrated that turberculosis is distributed broadly enough to demand the serious attention of poultry-men. The disease exists extensively among many large poultry ranches, but seldom kills enough fowls at any one time to excite the alarm of the owner. Its existence in a flock constitutes a steady drain, but it fails to attract much attention, because the losses are so evenly distributed in point of time. So far, tuberculosis has been observed in grown fowls only. It does not appear to occur in young chicks, In the first outbreak of the disease brought to notice, the owner reported a loss of about 250 fowls during a year out of a flock of 1,400. He had made a large number of post mortem examinations, and as the alterations occurring in the disease are readily recognized, the observations have some interest.

Symptoms.—There seems to be no noticeable symptom until the disease has progressed far enough to cause emaciation and weakness. In such cases the breast muscles are found to be wasted away, and the light weight is very noticeable. In the last stages of sickness the affected bird crouches, apparently from weakness The pale comb, the ruffled feathers, unnatural gait, and general attitude are features that attract attention to the victims of the disease.

A very small percentage of affected fowls show tuberculous nodules on the skin of various portions of the body. It may consist of single spherical masses each surrounding the root of a feather, or more often consist of large masses. These nodules, when occurring on the head, should not be confused with the swellings that appear on the head in advanced cases of roup (swell head), nor with the wart-like lumps found on the head in chicken-pox

Facts concerning the length of time that fowls usually live when infected have not yet been secured. One hen, inoculated by injecting crushed tuberculous liver into the abdominal cavity, died in six weeks of generalised tuberculosis.

In most cases the liver is affected. It is found enlarged, and studded throughout with yellowish-white nodules of a more or less cheesy consistency, varying greatly in size and number in different cases.

The nodules are very readily separated from the surrounding tissue. Poultrymen are familiar with the condition, and refer to it as "liver complaint" or "spotted liver." The spleen, in health a small rounded purple organ about half an inch in diameter, is frequently affected with tuberculosis, and in consequence greatly enlarged. Rounded masses of varying size may be found in the walls of any part of the intestines. The mesentery, the thin membrane to the border of which the intestine is attached, is occasionally dotted with nodular masses. The lungs are very rarely affected. Alterations of the bones, joints, or other organs occur more rarely, and are not so readily recognised as the changes described. Most hens badly affected with turberculosis are very lean, but exceptions have been observed. Tuberculosis is an infectious disease caused by organisms, known as tubercle bacteria, which gain entrance to certain organs of the body and multiply there. The nodular growths (tubercles) so constantly found in tuberculosis are caused by the presence of these bacteria in the affected regions. The spread of tuberculosis from one fowl to another occurs only when conditions permit the transfer of the live tubercle bacteria more or less directly from the diseased to the healthy. The presence of tubercular growths in the walls of the intestine and in the liver suggests that the tubercle bacteria enter the body with the food. The rarity with which tuberculosis occurs in the lungs of fowls would indicate that infection by inhalation of tubercle bacteria occurs rarely, if at all.

An examination of the tubercular growths located along the walls of the intestine leads to the conclusion that the tubercle bacteria are liberated from the body along with the droppings A microscopic examination of the contents of the intestine at such points shows that enormous numbers of tubercle bacteria are present. The conclusion that they are liberated through the intestine is certain. The droppings of fowls affected must, therefore, be regarded as an important factor in the spread of the disease.

No evidence is to hand to indicate that tuberculosis is spread through the egg.

Considerable attention has been paid to the ailments causing the death of young chickens, but no tuberculosis has been discovered among them. The location in which the droppings are deposited bears

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considerable relation to the probability of that material infecting healthy fowls.

The practice of feeding soft food from the ground affords the best opportunity of contamination of the food with fresh droppings, and there exists the possability of conveying infectious materials by the feet to the food outside.

There is no known remedy for the cure of tuberculosis in the fowl. Affected birds should be killed as soon as the existence of the disease is recognised. It is useless to attempt taeatment. It must be controlled by measures designed to keep the healthy fowls separated from the diseased ones

When the disease exists in a flock of fowls, there are usually many in the early stages that do not betray their condition by appearance or behaviour.

There is at present no means of detecting the existence of tuberculosis in a fowl until the affection has progressed sufficiently to produce lameness or emaciation

There is reason to believe that fowls may be diseased badly enough to make them a source of danger to other fowls, without suggesting by their appearance that they are affected. The tuberculin test so generally used for the detection of the disease in cattle does not give positive results when applied to tuberculous fowls.

Tuberculin is a liquid prepared from beef broth, in which the tubercle bacteria have been cultivated for several weeks. When injected under the skin of cattle affected with tuberculosis, it produces a rise in temperature, usually about 2 degrees above normal. The test in competent and honest hands affords ready means of detecting the disease when other means would fail. Trials upon 21 fowls affected with the disease have not indicated that the test may be successfully applied to them, and in view of the unsatisfactory results obtained, it was determined to repeat the work. But even should the tuberculin test prove applicable to fowls, its usefulness would be limited on account of the impossibility of applying it to a large number of them, as would be necessary on a large poultry-farm.

There is no apparent way of recognising all the tuberculous fowls in a flock so that they may be removed. Therefore, all the individuals in an affected flock must be regarded as dangerous to those free from the disease, and must be kept free from them. Fowls suspected of having tuberculosis should be killed promptly. The roosting-houses should be cleaned and disinfected as often as practicable.

It should be remembered that cases which cannot be detected are constantly spreading the germs of the disease about the houses, and, in consequence, the effect of one spraying of disinfectants is of short duration.

Relation to Tuberculosis in Man and Cattle.—The subject of the relationship between tuberculosis in man or cattle and the disease in fowls is full of interest. Tuberculosis in cattle is prevalent in the same district in which the disease occurs in fowls, and examples of tuberculosis in both cattle and fowls on the same ranch have been observed. Attempts to transmit the disease from man or cattle to fowls have usually failed. The possibility of the transmission of turberculosis from poultry to man is a matter concerning which it is exceedingly difficult to collect evidence.

The fact that fowls when eaten are well cooked, indicates that there is practically no danger from that source. It has not been proven that tuberculosis is transmitted through the egg; and further most eggs are well cooked when served. It does not appear, therefore, that tuberculosis in fowls is a matter that very intimately concerns public health.

The experience of most poultry-breeders in relation to the many forms of liver disease is that adult fowls are usually the subjects, and the authority above confirms this, that no tuberculosis has been found in young chickens, however, during the present season. The writer had an experience in his own yards which, unfortunately shows that some deaths during chickenhood may be due to a diseased liver. In a flock of cross-bred chickens four weeks old, two became droopy listless and with poor appetite. On the third or fourth day one died and when dissected the liver was found to be enlarged and covered with pale spots. I killed the second one and, through the Chief Inspector of Stock the liver was forwarded to the Microbiological Laboratory, Department of Public Health. for report, which I duly received and was as follows;—"The section of liver shows areas of necrosis." In other words there was a mortification or dying of the liver.

She was a lady of mature years, and seeing that she was wiping the flower off her hands with her apron, the grocer was not surprised to learn that she had left the task of making the week-end puddings to visit him.

"Me an' my 'usband's bin 'aving a hargyment," she said, "an' we thought you could settle it. How long's the dodo been extinct?"

Mr Sands retreated into his private sanctum, selected the "D" section of the new encyclopædia, and returned with the information that the dodo had been extinct 200 years.

"Oh" said the lady, as she suddenly produced some doubtful-looking eggs from her pocket, "I thought by the smell it was about that; but my 'usband 'e said it was 300 years. You must 'ave made a mistake a-sendin' 'em to me. I ordered 'en's eggs, not dodo's!"

Soft food for fowls should be given as dry as possible.

A balanced ration is an allowance of food which is so mixed, and proportioned as to produce the maximum of food value and the minimum of waste.

Roseworthy Egg-laying Competition.

The egg-laying competition just concluded at Rossworthy College has beaten all previous world's records. The record before this competition was held by Mr, W. L. Williams' Sunnyhurst Farm (in this State) pen of White Leghorns, which put up a total of 1,494 last year at Subiaco, Western Australia. In the competition just closed two pens, also White Leghorns, eclipsed those figures, Mrs. A. E. Kinnear's, with an aggregate of 1,531 beating Mr. A. H. Padman's (1,528) by three eggs, whilst Sunnyhurst Farm was third with 1,442.

Poultry Farming.

One of the greatest mistakes made by those who dream of making money by means of a poultry farm is that they base their calculations on the returns in eggs and chickens upon the results of keeping about 20 hens. They argue that if 20 hens will produce so much, 100 hens will produce five times as much. Many have tried it, but there is no record of success The best returns are those obtained from the fowlyard on the farm. It stands to reason that this should be so. On the farm the fowls practically feed themselves. They have many acres of run, where they find a variety of food in the shape of insects, grubs, grain, and green stuff. The exercise they get makes them hardy and strong. On a poultry farm the birds are confined to small runs. All their food has to be bought, and the herding together of large numbers of fowls in fixed houses usually results in the development of disease. A farm without poultry is like a buggy on three wheels. Every farmer should keep poultry. If he has an orchard, the fowls will keep it clean by scratching away the weeds and destroying injurious insects.

What Age for Eggs?

All pullets should be allowed to become fully matured before being asked to bear the strain of egg-production; they cannot do two things at the same time—grow, and make eggs. A pullet should be six months old or over before she is started laying if you want to make her a good hen. When pullets commence to lay they are uncertain; some will lay regularly every other day, and others only twice a week. To keep pullets laying regularly requires care; they should be fed with a system of regularity—not one day a picnic and the other a famine; for that will upset any pen of layers, and more so pullets. Most poultry-breeders give too much food. It is a good plan to keep layers a little hungry, so that they run for their food when given them.

The hardest task is to keep the layers in proper condition right up to the end of the laying season; and with a little care and watchfulness a proper condition can be kept up. If the fowls seem lazy or off their feed, do not use drugs or medicines—starve them by missing a meal or two. In the middle of the laying season and on to the end of it miss the evening meal once a week, generally on Sundays; this leaves them with a good appetite for breakfast.

Pithy Pars.

Don't give the cat suspected of chicken stealing the benefit of the doubt.

Early maturity and profit in feeding are so closely associated, that every feeder realises the necessity of securing the former to obtain the later.

By feeding a little at a time, the birds clear their food up more readily than if it is thrown down in bulk, and when the fowls are noticed to be eating less greedily no more should be given to them. The object of those who feed fowls should always be to give them just as much as they will clear up readily and no more.

Keen observation is the most necessary attribute of a successful poultry breeder.

Maize should now be freely used for all descriptions of poultry. It should be given to the fowls whole, and, if used in the morning should be boiled the evening before and given warm. This food being of a fattening and heating nature, is just the thing for the Autumn and Winter. On account of its oily nature, it loosens the old feathers and helps a fowl through its moult.

INTERESTING TO LADIES AND GENTLEMEN.

That attire has much to do with health is beyond question. Mrs. L. Hutton, who is an expert in the construction of "The Improved Health Corset," also abdominal belts, ladies', gents', and maids' shoulder braces, gives absolute value in material and artistic design. Mrs. Hutton controls the depot for the manufacture and fitting of the above articles, as well as the "Champion" shoulder brace. We sincerely recommend our readers in need of such to call on Mrs. L. Hutton, 13 Selborne Chambers, Pirie street, City.

To Correspondents.

"Farmer."—The best time to sow lucerne is after the first winter rains in March or April. Sow 10 to 12 lbs of seed per acre broadcast, or 8 to 10 lbs per acre in drills. The soil should be thoroughly pulverised before sowing, and the seed lightly covered. The proper time to cut lucerne is just when it comes into flower; it may be cut several times during the season.

A. Brown—The record crop of turnips grown per acre as far as we know was grown by Mr John S. Reid, Rothills, England. This crop produced the enormous weight of 56 tons 11 cwt. 1 qr. 20 lbs The name of the seed was Sutton's Centenary.

"White Leghorn."—The best way to feed charcoal is to keep it in granulated form before the birds all the time and let them help themselves. If this is not practicable, give a heaped teaspoonful of powder to each dosen head once a week, or for growing stock, twice.

"Mignonette."—Although mignonette is usually classed as an annual, it is really a perennial. Properly grown and treated the plants will last several years.

"Query." — The standard weight of Orpington hens is 7 to 8 lbs.; pullets ready to lay should be 5 to 6 lbs.

"J.D."—Potatoes should be sliced for cattle and sheep, and cooked for pigs. They are about equal in feeding value to beets and turnips.

"Waroo."—Red in plumage of a Black Orpington is a fatal defect. It crops up occasionally in the best of strains. All defects are liable to crop up in the progeny of afflicted birds, but not all the progeny will have the defects.

INTERESTING TO SMOKERS.

After doing a steady day's work either in the garden, field, or store, a substantial meal is necessary to kesp the strength up and fit one for the next day's work. After dinner there is nothing so soothing as a comfortable smoke, and it is necessary for the man whose means are small to get the vesy best value for his money. The well-known brand of Diamond Tobacco completely fills the bill, as it is at once the very best value ever offered. To those who like a strong tobacco the dark twist is most suitable, whilst for those whose taste is for a milder smoke the aromatic plugs are specially made. Whilst nearly all other tobaccos have been raised in price through the higher tariff, Diamond Tobaccos are still sold at the old price, which is a sure guarantee the proprietors are doing their best to give the utmost benefit of their stocks to their customers, who seem to appreciate it, judging by the large increase in the sale of this favorite brand.

The Dairy.

Should Cows be Stripped?

Should cows be stripped after milking or not? Discussing this question in an English journal, Professor McConnell, the eminent English dairy expert, says that he is one of those who all his life was accustomed to see cows stripped out by a responsible person, who followed after the regular gang of milkers; but recent events caused him to change his mind as to the advisableness of the practice. Many authorities have pointed out aforetime that, as the milk secretion was intimately connected with the nervous organisation, the stopping of the milk and then coming back to start it again were doing the cow harm, as it amounted to restarting of the nervous energy. About a year ago Professor McConnell stated his belief that stripping was absolutely necessary. He now takes it all back, as since then he has tried his cows the other way, with the most satisfactory results. They are now milked out at one sitting, and if a small quantity be left in the bag, the professor argues, it does the cow no harm, and as there is no possible gain then in stripping, he contends that it is discounted by the harm done to the cow by the stripper in starting her nervous force once more. Alongside the cessation of stripping, however, another practice has also been abandoned—that is, the changing round of the gang of milkers, so that each cow is milked by each milker in rotation; every man now sticks to his own lot of cows, and as one cow drops out and another comes in the lots are kept as equal as possible. As far as Professor McConnell can see, the results to the cows, to the milkers, and to the milk yield are eminently satisfactory, and he, for one, will not go back to the old system.

Dairy Notes.

The state of the weather has a marked effect on the milk flow, and a change from warm to bleak cold weather will always cause a considerable falling off if no provision is made to protect cows by stabling or rugging. Excessive heat is also detrimental, and shady shelters should be erected, if no natural shelter exists.

When milk is allowed to stand in shallow vessels, the fat globules, which are lighter than the milk serum, will rise to the surface and form a layer of cream. This separation may be accelerated by rotating the milk very rapidly, as under the influence of the centrifugal force the light fat globules rise very much quicker, and at the same time the separation is more complete and leaves a skim milk containing only traces of butter fat. The composition of the cream depends entirely on the manner in which the separator is worked, and cream may contain from 20 to 60 per cent. of butter fat. The keeping quality of the cream again will depend largely on its richness, and a cream containing only 15 to 20 per cent. of fat contains still a very large amount of milk serum, with its casein and milk sugar, which soon gives rise to fermentation, bad flavours, and various taints. The ripening of a richer cream will proceed more uniformly and favorably, the churning of such cream will give better results and produce a high-grade butter, and the cream tests are easier checked

If milk is kept in dark, ill-ventilated cupboards it very soon acquires an insipid or perhaps a bitter taste, and very definite signs of putrefaction begin to appear if it is left there for any time.

In many dairies (says the 'Journal of the Board of Agriculture'), particularly in large ones, where the sale of clotted or Devonshire cream is considerable, a quick method of producing this article is employed. Instead of the preliminary setting up of the milk in pans for twelve or twenty-four hours, as the case may be, in order to allow the cream to rise, the milk is passed through a separator. The separator is regulated to take off thick cream, and this cream is then run gently on to the surface of some separated milk contained in tinned or enamelled iron pans. Scalding is then carried out in the usual manner, not less than half an hour being occupied by the heating process. The pans are then rapidly cooled, and the cream obtained in a thick clotted condition. Where there is a separator this is a very good way to make clotted cream, especially in summer, when it may always be obtained sweet. In hot weather, if the milk has to stand for several hours for the cream to rise, there is a danger of souring taking place.

Some dairy farmers always remove the calf from the cow as soon as it is born. This is all very well if the well-being of the calf is not a consideration, but, although the latter will thrive fairly well when hand or bucket fed, it will never become such an animal as that which is allowed to remain for the first two or three weeks with its mother. To all appearance the milk is the same, and the calf gets as much as in the natural way; but, for all that, there is a marked difference in the results, and it is undoubted that the sucking calf will not suffer from such complaints as scouring to anything like the extent that the bucket-fed calf experiences.

When cleaning dairy utensils, always rinse them first with cold water. If hot water is used, the sticky albumen coagulates on the sides and bottoms of the tins and is very troublesome to remove. After rinsing with cool water, wash thoroughly with hot water, using plenty of alkali, such as washing powders or caustic soda, and 'elbow grease.' Then again rinse in fresh, hot water, and set them in the air to dry.

Mammitis, an inflammation of cows' udders (causing a form of diphtheria in human beings), which threatens to overwhelm the dairy herds of New Zealand, has been successfully attacked by a German specialist by injections. The disease germs gain admission through the milk canals, and the German therefore attacked them along the same channels. He first thoroughly milked the udder, and then cleansed it with warm soapsuds and a 3 per cent. solution of creolin. After the udder had dried, injections were made into the milk cisterns with solutions containing 5 per cent. creolin or camphorated oil. The treatment was repeated three times daily, and in nearly all cases brought about prompt improvement.

Some big figures were put up by Lord Rothschild's dairy herd last year. The average yield of 18 Jerseys was 7,455 lb. per annum, the highest individual yield being 10,000 lb., and the lowest 4,909 lb. Ten of the 18 cows gave over 7,000 lb. of milk The average for the 40 Red Polled cows comes at 6,571 lb., the top place having been gained by a cow nine years old which gave the remarkable quantity of 12,005 lb.

When trouble with stringy milk occurs it is usually overcome by carefully cleaning the cow's udder before milking, washing the milker's hands, and thoroughly steaming the tinware, strainer, cloths, cans, etc.

Pedigree is valuable in a way, but it must be backed up by the performance of ancestry at the milk pail. This, after all, is the best test of a cow's ability and worth.

It is reported that, in the markets of the Far East, a brand of butter is being sold in imitation of a well-known Victorian brand, and also that there is being sold a compound which is made to appear like Australian butter, with the object of deceiving the purchasing public. Mr. R. B. Levien, the Victorian commercial agent for Japan and the Far East, has forwarded to the Government a statement regarding these imitations, and he has also asked the British Consul-General at Shanghai to endeavour to protect Australian trade from such foreign devices. Mr. Levien says he is of opinion that the imitations of which he complains are made in Holland.—'Australasian.'

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May Number of 1908

The Australian Gardener

(A Monthly Journal of Floriculture, Horticulture, Agriculture, and Poultry),

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&c, &c., &c.

EDITORIAL.

THE May number of "THE AUSTRALIAN GARDENER" has blossomed out into a record issue with 28 pages of matter, every line of which should be read carefully for those who seriously seek information of use and interest. In addition to the literary test of the issue there are columns of advertising about practical and entertaining subjects which make a house bright and cheerful. "THE AUSTRALIAN GARDENER" has for years made a persistent effort to give instruction to amateur gardeners, and to record interesting facts to professional men in the garden, the dairy, and on the farm. It is therefore gratifying to the proprietary to see the gradual success attending its production. This success is alike cheering to those immediately concerned in the literary and business aspects of the concern as well as to its readers, who equally reap the reward. The interests of the proprietary and the readers are mutual. All the efforts put forward by one when seconded by the other result in mutual benefit to both, and we trust that this large increase in the issue will only be a forerunner of greater enterprise on the part of advertisers, readers, and the proprietary.

The articles as usual are replete with the best information obtainable from the most reliable sources, and what more can a reader want. For the garden the notes are seasonable, and nobody who reads and applies the necessary common sense with a little industry need have a garden empty of bloom. A special article is devoted to the Aster, which the season has shown is becoming a favourite flower. Anybody can grow asters, and there is not a soul existing that does not admire the beauty of its cheerful bloom and variety of colouring. A number of paragraphs are given to the rarer kinds of flowers which require special care. And why should not everybody have a few specialities in their gardens, or make a little effort to put up a little shade house, or a frame to carry glass. It may be a little trouble, but a little trouble brings great satisfaction when one has something to show for it. To get out of the ordinary ruck of flower growing is like taking a drive through the bracing air of the hills when one spends all his routine life on the plains. There is a brisk enjoyment in it, it is invigorating to the system and pleasant to look upon.

For the farmer, who should by the way always do a little gardening for the recreation of his mind if not his body, and cheer for his often disappointed disposition, there is some excellent advice about the care of his horses. There are few things so helpless and disconcerting as a sick horse. If he could talk it would not be so distressing in his sickness, but mute suffering is painful to witness and induces a hopeless sort of fear of loss. The application of lime to soil is an article well worth careful consideration, if for no other reason than that it is too often neglected. In regard to manuring it may be supposed that everybody knows all about it, but the advice of our contributor this month is well worth reading even by those who know so much about it by experience.

A new feature in this month's issue is an article specially selected for the young folk. Every boy and girl should have a little garden plot of their own, no matter how small. It should be part of their earliest training at home to help father and mother, and equally responsible should parents feel that the good wholesome pleasure of making a little garden for their children is fully recognised. The meaning of terms in gardening is one of the first essentials to interest. The child should know why it does things. It is not enough to understandh tat if it puts a slip or seed in the ground it might grow into a plant. The more you can make it understand the greater the interest it will take in the product.

The poultry yard still claims a good deal of space, and rightly so. The diseases which not only worry and kill the fowls but also worries and kills the interest in the poultry-keeper are continued and their treatment explained and dealt with. A famous poultry raiser once gave a remedy for diseases in poultry which is sure but hardly a remedy after all. He said the best way to cure a sick fowl was to cut its head off. Truly effective, but hardly satisfactory either to the fowl or the owner. A most instrutive article deals with poultry crossing for table birds and we know of no better advice than is given there.

We are always writing about keeping the dairy clean. We cannot help it and if we could we would not. It is the begining and the end of success in the dairy, without it nothing much matters. Cheese making is but little practised, but that is no reason why people should not make cheese for themselves and good cheese too.

The vegatable gardeners have their full share of advice, and so have the workers in the orchard.

The Vegetable Garden.

CARDINAL RADISH.

Operations for the Month.

Asparagus.—Advice was given last month to have some ground made ready for this good vegetable. If this work has not been done, set about it as soon as possible, and do not delay it until the planting season.

Artichoke (Globe).—A vegetable hardly worth the growing. It is a cultivated form of the wild cardoon, a native chiefly of the Mediterranean sea-coast. Plants or suckers may be planted at any time during the month. The soil should be a rich sandy loam, moist, but well drained, for this vegetable to come to perfection. Half-a-dozen plants will probably be enough to grow. They may be planted in a row about 3 to 4 feet apart. The artichokes will succeed fairly well on moist soils, if not too dry, provided the ground be well manured.

Beans, Broad.—Seed may be sown largely at intervals during the month, in order to keep up a constant supply. It needs a good deal of moisture, and is a suitable vegetable for cool districts, quite unlike the French bean.

Beans, Kidney or French.—Should only be sown in the warmest parts of the State, where frosts are not likely to occur. Old plants should be cleared out of the garden immediately they cease to be productive.

Brussels Sprouts.—Sow a little seed during this month in a seed-bed, or even in a box, in order to have some plants coming on for successional planting. If strong plants can be obtained they may be planted out.

Cabbage.—Sow seed of several varieties as recommended before once or twice during the month. If strong seedlings are available, put them out.

Carrot.—Sow a little seed occasionally in drills about a foot to 18 inches apart. Sprinkle the seed thinly along the shallow drills, and cover by hand with fine soil.

Cauliflower.—Sow a little seed occasionally, and plant out strong seedlings, a few at a time.

Celery.—Sow a very little seed, and plant some good strong seedlings in shallow trenches. Apply a heavy dressing of manure before planting.

Endive.—This is a plant rather like lettuce in appearance, and it is used as a salad. Sow a little seed, in the same manner as you would lettuce, and afterwards transplant the seedlings when they are large and strong enough. The soil should be made rich, for the plants should be grown quickly so as to have them tender.

Leek.—Sow some seed and plant out the seedlings when they are 8 inches or so in height. The ground must be made very rich to grow the leek to perfection, for it is a greedy feeder.

CHINESE ARTICHOKE.

Lettuce.—This is a good time to sow seed, and also to plant out strong seedlings from previous sowings. Move the plants without breaking any roots if possible. The great object to attain is to grow them without a check, and this can be done if they are carefully taken out of the ground and carefully planted. Make the soil rish with well-rotted manure.

GOLDEN DAWN CAPSICUM;

Onion.—The ground should be made rich and worked fine on the surface, and particular care should be taken to have the beds well drained. Sow in rows, and barely cover the seed with fine soil. Keep the beds quite free from weeds, and, to facilitate the weeding, the beds should be made narrow. Soot mixed with salt half and half, makes a useful top-dressing sprinkled among onions when they come up.

CHINESE CABBAGE.

Parsley.—Sow some seeds of this useful plant.

Parsnip.—Sow a little seed in drills. This is a deep-rooting plant, and therefore the soil should be deeply worked.

Peas.—Keep on sowing a row or two from time to time, in order to keep up a continual supply if necessary, for it is hard to find a better vegetable than the pea. Sow in rows about 3 to 4 feet apart. The drills should be about 3 inches deep, and the peas about 3 inches apart in the drills.

Radish.—Sow a little seed occasionally in order to keep up a supply of this very useful vegetable.

Sea Kale.—Sow a very little seed now and then.

Spinach.—Sow a little seed during the month.

Shallots.—Plant out some bulbs or cloves in rows about 12 to 15 inches apart. Do not bury the clove deep, but just press it firmly into the soil.

Herbs.—Sow seed and lift; divide and replant old plants.

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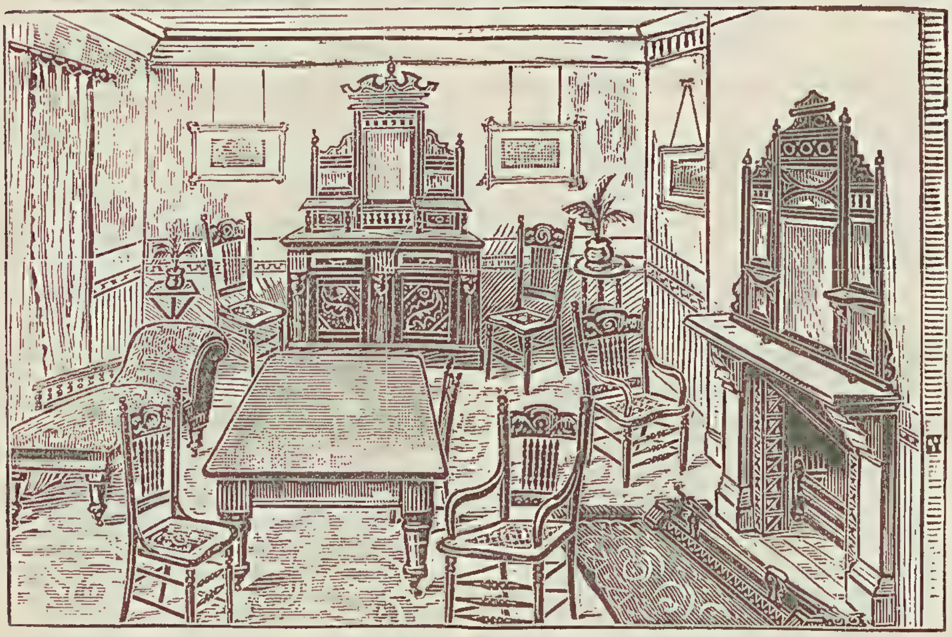

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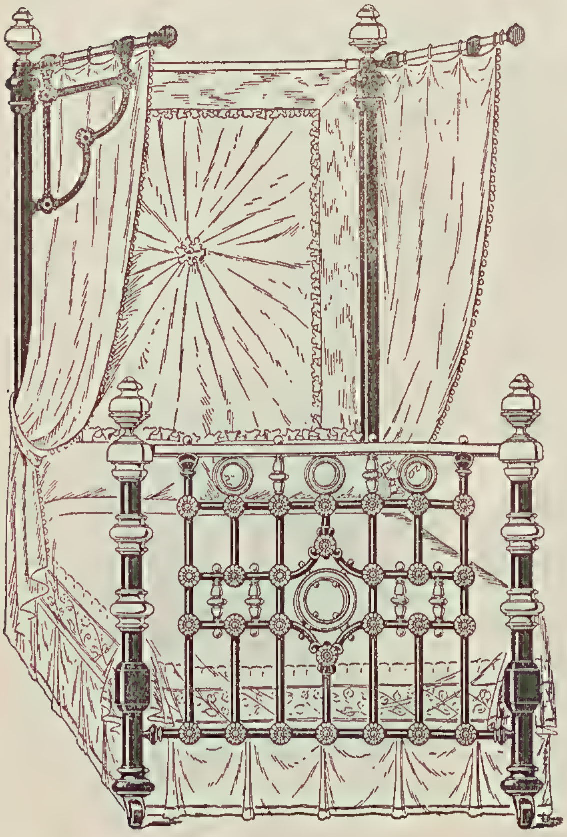

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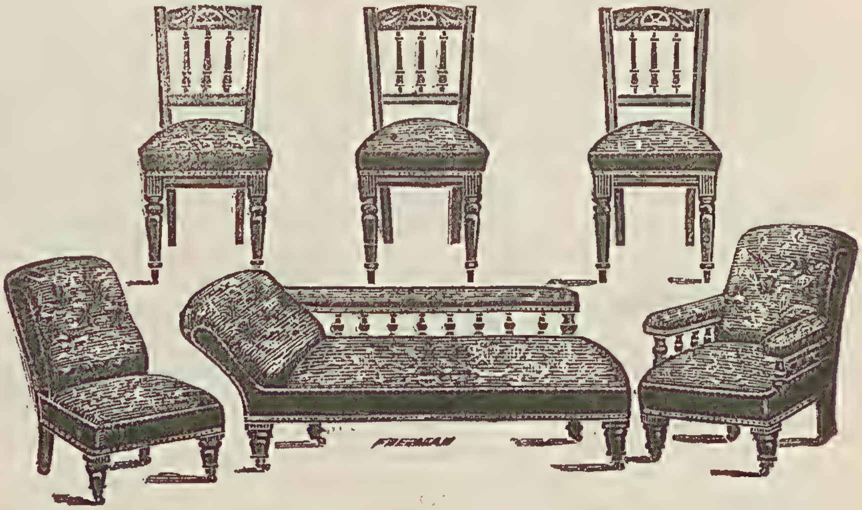

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The Flower Garden.

GIANT COMET ASTER.

The Aster.

[By J. Cronin.]

Asters, or Michaelmas daisies as they are commonly termed, are perennial herbaceous plants blooming during the late summer and autumn months. The genus is a large one, over a hundred species being known. Most of the species are of little account as decorative plants for the garden, while others, and varieties raised from them, are worthy of a place in most gardens. The principal objection to many asters was their long and straggling habit of growth, but most of the kinds now generally grown are dwarf and compact. The range of color is not wide; the majority of the species and their varieties produce flowers of shades of blue, purple, lavender, a few bearing white flowers. The plants are hardy and very floriferous, and are specirlly suitable for mixed groups or borders where they supply a quantity of flowers of unusual and pleasing shades of colors at a time of comparative scarcity. The flowers are valuable for decoration, lasting well when cut from the plants.

The genus aster at one time included many shrubs, herbaceous perennials, and annuals, now referred to other genera, including Callistephus, commonly known as the China aster. For the purpose of these notes the China aster may be referred to, as it is unlikely that it will be known under any other name than the present common one. A number of varieties of the China aster have been raised by florists, many of them being of no exceptional merit. They are favorites with numerous gardeners, amateur and professional, although their season of blooming is comparatively short. Many diverse forms are obtainable, and the general habit of growth of the best varieties is neat and compact. The flowers are valuable for decoration, lasting well in water.

The cultivation of the perennial asters is exceedingly simple. They will thrive in any fair garden soil, having a fair preference for soil that will be cool and fairly moist during the growing season They will grow fairly with a little attention in the matter of manuring and watering, but repay any special care in those directions. In fairly rich soils and situations, where they are allowed room to expand, they will not require to be removed and replanted for several years. In poor soils, and under hot and harsh conditions, it is advisable to lift the plants and transplant into manured soil each season. The usual method of increase is by division of the parent crown in autumn or spring. A small division will develop into a fairly large plant during the season of growth. Plants may be struck from cuttings in spring, but this method is rarely practised except by nurserymen when desiring a rapid increase of a scarce kind. New varieties are raised from seeds, which should be sown in light soil in spring. Seeds saved from some of the newer hybrid kinds may produce varieties varying in some respect from the parent The general cultivation of the perennial aster during the growing season consists mainly in keeping the soil fairly moist during dry weather, and training the plants to stakea where necessary. Tall growing varieties may be cut back when about a foot in height, which will have the effect of dwarfing them a good deal. A number of varieties and species of aster are available in the different nurseries.

The China asters are annuals, and must be raised each season from seed. They are classed as half-hardy, a classification that denotes inability to resist normal winter conditions. Seeds should be sown in spring, September and October being the most suitable months for these and most other annuals of a like nature. To get good results, seed should be sown in boxes of light soil, and when the young

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plants are fit to handle they should be transplanted into boxes or beds and grown on for a time, when they should be transplanted into their flowering quarters. The first transplanting insures sufficient room for the development of the young plants; while, if left in the seed beds or boxes until the time came to transplant them into the beds or borders, they would unless sown very thinly be drawn and weakened. To attain something approaching perfection the China aster requires a good rich soil, well drained and prepared, and a fair supply of water during the growing season. Under suitable conditions some of the strains produce flowers of great size and beauty. Where water is scarce a mulching of manure will assist materially in the development of the plants. After the flower buds are formed it is advisable to withhold water in a measure as the flowers are liable to 'damp off.'—'The Journal of Agriculture of Victoria.'

Notes for the Month.

In all the warmest parts of the State evergreens, or those plants which retain their leaves during the winter, may be planted out. It is always as well to plant evergreens early in the autumn, so that they can be established to some extent before cold weather sets in. Of evergreen plants one of the best known is the camellia, of which there are many beautiful varieties. This shrub is an easy one to grow, and may frequently be seen in gardens; but the variety most commonly to be met with bears flowers of but a poor quality. Some of the best varieties to grow are:—Alba Plena, a pure white; Adele Pelagi Medicis, white marbled with pale pink, Augusta Superba, clear rose; Bealli, deep crimson; Comte de Gomer, rose striped with crimson; C. H. Hovey, dark crimson; C. M. Hovey, beautiful bright crimson; Comtessa Lavinia Maggi, pure white and rosy-cerise; Cup of Beauty, pure white and rose; Dryade, rose; Duchess of Berry, pure white, one of the very best; Harriet Beecher Sheather, raised in New South Wales, rosy salmon, one of the best: Henri Favre, salmon-rose: Isabella, pure white, an excellent variety; Lady St. Clair, pale flesh pink, a most beautiful camellia: Lowii, rich crimson; Prince Frederick William, rich rose, one of the best. One cannot go wrong in making a selection from the above. The prices will vary from 1s. 6d. to 2s. 6d. each.

The camellia, named after a Moravian Jesuit, G. J. Camellus, is a fairly hardy plant, native of China and Japan, and belongs to the same natural order of plants as the tea. Throughout the coast districts the camellia thrives to perfection, and in colder parts when not exposed to cold winter blasts, it grows well. When selecting plants do not choose large ones. Small plants, well rooted but not pot-bound, are the best. In good soil and favorable situations camellias attain a considerable size: therefore, under such circumstances, allowance should be made and sufficient space provided.

Bouvardias at this season of the year are to be seen in perfection. They will succeed best in warm situations in almost any kind of soil, provided it be fairly moist but well drained. In warm districts they may be planted out this month, but if they do not become well established before winter sets in, they are liable to die

All the varieties are pretty, but the best are:—President Garfield, double pink; Alfred Neuner, double pure white; Hogarthi, flora plena, double scarlet; Sang Lorrain, double crimson; Bridal Wreath, pure white; Candidissima, pure white; Humboltii, corymbiflora, sweet-scented, pure white; President Cleveland, scarlet, one of the very best; Laura, deep pink; Maiden's Blush, blush pink; Priory Beauty, satin rose; Triomphe de Nancy, double salmon; and Victor Lemoine, double red.

Hardy annuals—that is, plants which live for one season only (although in some parts of the State many plants which are annual in cold climates continue to live for more than a year)—and hardy perennials, or plants which live for many seasons, may be sown here and there about the garden, or else in pots or other convenient contrivances, as suggested last month. Any seedlings that came up last month, and appear to be large enough and strong enough to move, may be planted out, taking care to shade them and water them until they are well established.

If anyone has an overgrown neglected garden, and who wishes to start afresh after reading these notes, had better make a wholesale clearance of all useless ill-shaped trees and plants, trench the ground, and dig in a heavy dressing of farmyard manure.

Bulbs started last month and previously will soon start into growth, so when clearing, hoeing, or raking the garden, care must be taken not to injure the young tender shoots.

We wish to call attention to an advertisement in these columns of 'Kondo Poultry Food.' 'Kondo' is no new food, it having been used by prominent poultry breeders throughout the Commonwealth for years and with great success. 'Kondo' should always form part of the daily food during the critical periods of moulting, laying, and feathering, for at these change they require large quantities of nitrogenous food. Successful poultry-keepers recognise the need, and we have every confidence in recommending 'Kondo.' It is manufactured by Messrs. Thornley & Co., of Sydney, and Mr. R. G. Lillywhite, of Alma Chambers, Adelaide, is the sole agent for this State and Broken Hill.

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Kentucky Blue Grass (Poa pratensis)—Perennial, well adapted for light soils, much liked by stock. Sow 20 lbs. to acre.

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Yellow Trefoil or Hop Clover (Medicago lupulina)—A fibrous-rooted biennial, very productive, produces early Spring crop; largely used in S.E.

White or Dutch Clover (Trifolium repens perenne)—Sow 8 to 10 lbs. to acre.

Red Clover (Trifolium pratense)—Sow 10 lbs. to acre.

COW GRASS or PERENNIAL RED CLOVER, Mammoth Clover (Trifolium pratense perenne)—Sow 10 to 12 lbs. to acre.

LOTUS CORNICULATUS (Birdsfoot Trefoil)—Deep-rooting perennial.

TRIFOLIUM SUBTERRANEUM—An annual of very spreading habit. In good soil one plant will cover 6 feet, producing a wonderful quantity of excellent fodder. 1/- pkt.

STRAWBERRY CLOVER (Trifolium fragiferum)—A very valuable variety for damp land.

ALSIKE CLOVER (Trifolium hybridum)—A hardy hybrid variety, flowers delicate pink.

ITALIAN CRIMSON CLOVER (Trifolium incarnatum)

KING'S ISLAND MELILOT (Melilotus)—Makes excellent silage, and is very good for green manuring.

Lucerne or Alfalfa (Medicago sativa) Best quality seed, specially sifted to prevent dodder.

THOUSAND-HEADED CABBAGE or KALE—Invaluable, lasts for years.

Tares or Vetches—An authority says: "Cows give more butter when fed with this plant than with any other food whatsoever." Largely grown by Mr. Porter at Victor Harbor.

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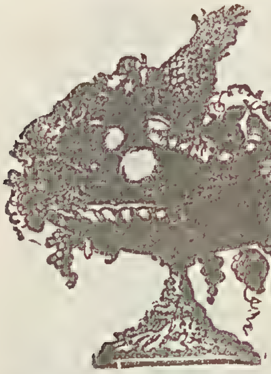

The Orchard.

Preservation of Fresh Fruit.

In a recent issue of the 'Bulletin de l'Office du Gouvernement General de l'Algerie' appears an article on the preservation of fresh fruit on long journeys. Accounts are given of experiments that have recently been conducted, and from them it appears that peat or turf has been found to be eminently suitable as a means of preserving fruit.

The attention of hygienists has been attracted to this substance by reason of its sterilising properties, constituting as it does a medium unfavorable to the development of bacteria. The existence of such qualities will secure for peat a large sphere of usefulness.

It is, however, in the preservation of fresh fruit that this substance will be more particularly used. Experience has shown, it is said, that it is superior to every other substance for the preservation of vegetables and fruit which have to survive long voyages.

Among ether experiments, it is mentioned that at the beginning of last year eleven packages of about 11 lb., containing oranges, mandarins, and lemons, were sent by parcels post from Palermo, in Sicily, to Togo, a German colony in Africa. Fruit were sent in reed baskets, packed in fruit-paper and peat. Envelopes of silk paper were used to keep the fruit humid. Each contained eight oranges or twelve mandarins. There being no direct communication by sea between Mediterranean countries and Togo, the consignment had to travel via Hamburg. At Togo the parcels were kept awhile before being forwarded to their final destination —a town in the interior of the colony, at a distance of over 230 miles from the coast.

The packages that arrived in the soundest condition were those which were considered most liable to damage, and which were only protected by a rough covering of interwoven reeds. It was observed that the fruit enclosed in boxes covered with tinplate as a rule showed traces of moisture.

Out of 45 fully ripe oranges packed at Palermo, 41 arrived at their destination in a perfect state of preservation, after a voyage of 55 days. The mandarins, generally speaking, also kept well.

The same method of packing was tried in the transport of young trees. The great difficulty was to keep them humid whilst protecting them against moisture. The attempt had been made several times without success to import plants from nurseries in Egypt. By using peat, however, success was ensured. So satisfactory were the results obtained, that it is proposed to import orange-trees into German East Africa from French possessions.

These experiments, it is observed, have shown clearly that peat is an invaluable means of preservation in the packing of fresh fruit. Exporters of fruit will be able, by the use of this substance, to purchase when prices are at their lowest, and keep their fruit until sufficient quantities are obtained to make large consignments; and the employment of the new preservative will permit, in the same way, of fruit being gathered and kept for consignment in large quantities to local markets.

Apricots Dried and Salted.

Some time ago His Excellency Sir Harry Rawson called the attention of the Department of Agriculture to a table delicacy made in Cape Colony called 'Mebos,' which he thought worth while experimenting with here, as apricots are grown to perfection in many parts of the State. Lately Miss Rawson has obtained from the Cape a receipt for the process, which she has kindly forwarded to the Department.

The recipe, which is given below, is very simple, entailing no more trouble than ordinary dried apricots.

Take soft, ripe apricots, lay them in salt water (about 2 ounces of salt to a quart bottle) for a few hours. Then lay them on a mat to dry in the sun; the next day press them between the hands to flatten and to let the stone come out. The next day repeat the process. At the Cape it generally dries and becomes 'Mebos' in three or four days in the sun, but, if the weather should be damp, they might be dried in heated rooms or a cool oven. To crystallise the 'Mebos,' lay them in lime-water for five minutes till they feel nice and tender, take out, wipe dry on a soft cloth, and rub coarse crystallised white sugar well into each; take 1½ lb. of sugar to 1 lb. of 'Mebos.' Pack closely with lots of sugar in between, in jars that will cork well.

A very nice sweetmeat, and said to be remedy for sea-sickness.

Lime-water.—2 tablespoonsful of fine lime to a quart of boiling water. Mix well, and when the lime has drained to the bottom, pour the clear water into a bottle; cork and keep for use.—Agricultural Gazette of N.S.W.

Fruit to the value of nearly £10,000,000, is consumed in England every year

Preserving Fruit in Nitrogen during Shipment.

At the Paris Exhibition af 1900 there was exhibited a case of fish that had been preserved in nitrogen for seven years without decaying. Reading of this, Mr. Edward Cooper, State Horticultural Commissioner of California, was impressed with the idea that if a suitable container could be furnished at a low cost the nitrogen could be profitably used in preserving Californian fruits during shipment to foreign markets. As a result of considerable experiments, Mr. Cooper has now succeeded in producing such a container. It consists of a paper box treated with bitumen to prevent the entrance of oxygen from the outside atmosphere. After the box has been filled with fruit it is closed, except for a small opening. A number of these filled boxes are placed in a steel cylinder from which the air is exhausted. Then the cylinder is filled with pure nitrogen gas, and by means of an automatic device the boxes are sealed. Peas, grapes, cherries, and many other fruits so treated were found to be perfectly sound at the end of five months, and in the case of some damaged fruit it was seen that all decay had been arrested by the nitrogen, only the spots affected when the fruit was encased remaining without spseading to the rest of the affected fruit.

Experiments for the control of peach blight in California have shown that the disease can be completely controlled by the use of standard Bordeaux mixture, or the lime and sulphur wash, applied early in the autumn, about the time of the first rains. The treatment has meant millions of dollars to the peach industry of the above State. The methods were recommended by the United States Department of Agriculture, they were widely used, and have proved a complete success.

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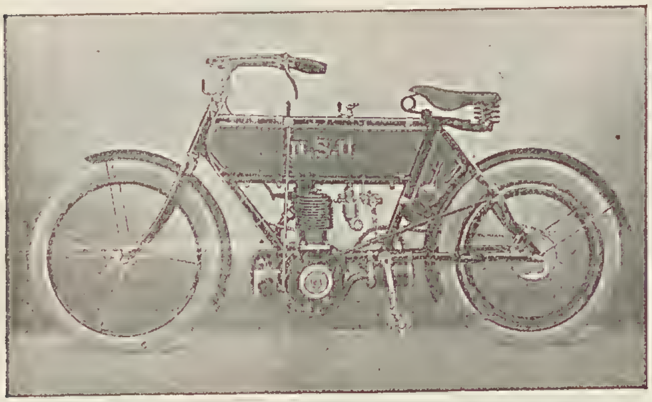

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The Farm.

The Overheated Horse.

Causes of the Trouble.

Indigestion is influenced by keeping work-horses in badly ventilated, dirty stables; paying no attention to grooming; overworking horses in times of stress; allowing too little time for the proper mastication of food at the noon hour; giving cool water too seldom, and then in too large quantities, or too soon after a meal; feeding corn during hot weather, or giving bran-mashes to horses not accustomed to such food, or allowing them to eat cut grass that has heated, or feeding new oats or new hay before they have become fit by ageing, or in too large quantities without accustoming the horse to the change. In other words, almost anything that will disturb the general health of the horse will affect his digestive organs in hot weather, and such disturbance therefore makes him subject to heat exhaustion. This being the case, the greatest possible attention should be paid by every farmer and horseman to the general health of his horses during the heated term of summer, and especially if much hard work has been done in the fields.

Thorough grooming at least once a day by keeping the pores of the skin unclogged and giving the sweat-glands a chance to work perfectly; allowing the horse sufficient time to chew his food well, and therefore prepare it for perfect digestion; giving him cool pure water often, but not immediately after feeding, to provide for the extra demands made upon the liquids of the body during hot weather; surrounding him with all possible comforts in his stable, such as fresh air, freedom from irritating gases and flies, providing sufficient clean bedding, shading the windows to prevent direct sunlight from injuring the eyes, keeping the feed boxes and mangers clean and sweet, and removing all feed that is not eaten up clean at each meal—all these things help to keep a horse healthy and prevent trouble in hot weather, and who can deny that they are the richly deserved right of every hard-worked horse?

Treatment.

At the first sign of derangement of the digestive organs, cut down the grain rations, and see that all food used is sound and free from mould or other taint. Allow free access to rock salt, and mix powdered wood charcoal, or a mixture of that and bicarbonate of soda freely in the food twice daily. If the manure is pale in color and offensive in odour, give half an ounce of hyposulphite of soda twice daily in the food or drinking water, if the horse will take it that way. If the dung comes in ball, but clay-colored and slimy, give an ounce of glauber salts twice daily in the food or drinking-water until improvement is seen, then once daily until conditions are normal. If much gas is passed with the fæces, or at any time during the day, give charcoal freely, and add hyposulphite of soda. If the horse pants at work, and has dry, hot skin, and is nearly exhausted, so that the owner concludes that some time or another he has been 'overhot,' work him early in the morning or late in the afternoon or evening, but not in the middle hours of the day, keep his head shaded but do not burden him with a big, soggy, heavy dirty sponge, which is not protective, but adds much to the misery of the horse. Air should pass freely under anything used to protect the poll of the horse's head when at work in the field. Then, too, if the easily-tired horse has a thick coarse coat of hair, clip it off at once, as this will tend to prevent exhaustion, and at the same time to prevent 'summer itch.'

What to Do in Acute Cases.

Despite all that can be done to prevent it, a horse will naw and then succumb to the heat, and the attack is ushered in by sudden stopping of the sweat, lagging, panting, distention of the nostrils, redness of the lining membranes of the eyelids and nostrils, passing of gas or thin fæces, bloating, staggering, stumbling, weakness, and finally, falling and unconsciousness. At the first sign of any of these symptoms, or the combination, unhitch the horse, remove his harness, get him into a shady place (under a dense tree, where there is a draught of air, by preference), and as soon as possible sprinkle him from head to foot with cold water from a sprinkling can, keep cold, wet swabs to the poll of his head, and give him large, frequent doses of any stimulant that may be had; but do not bleed him or administer dangerous drugs, like tincture of aconite, acetanilid, or strychnine. In severe cases the veterinary should be called as soon as the horse has been treated as we have suggested, and we feel sure that by following the advice given as to the prevention, and giving first aid intelligently and promptly when needed, losses from sunstroke will be materially lessened in our farming districts.—'Bseeders' Journal.'

Lime and its Application to the Soil.

Lime is very extensively used as a fertiliser, but its action is not generally understood, and serious mistakes often occur from its indiscriminate use. Most soils contain all the elements of plant food in varying quantities, but however abundant the presence of most of these essential constituents, if any one of them be absent the soil is practically barren, and if present in insufficient quantity the resulting crops are unsatisfactory to the extent of that deficiency. Lime cannot be classed among these deficient substances, for although it enters into the composition of almost all forms of vegetable life, its various compounds are so widely and generally distributed that it would be a very rare circumstance for any sample of ordinary soil to be found on analysis not to contain sufficient lime for the requirement of any cultivated plant. Then it may be asked, How is lime a fertiliser? Anything is a true fertiliser which causes a plant to make more vigorous growth and yield better crop; and lime does this in a twofold manner—viz., chemically and mechanically. First, as to its chemical action. All plant food to be available must be in a soluble condition, otherwise it is like human food under lock and key. All soils contain animal and vegetable matter in varying proportions and in various stages of decomposition. Now lime, in its caustic condition, is one of the most powerful agents of decomposition, and where, from defective drainage or other causes the land is 'sour,' and where organic matter does not readily decompose, the application of caustic lime often works wonders, causing these previously inert substances to yield an abundant supply of available plant food Probably this use of lime and its compounds sometimes reacts with injurious mineral substances, producing useful or harmless compounds—for instance, the action of gypsum on carbonate of soda. The mechanical action of lime on heavy clay lands is an important aid to fertility causing the soil to become friable, and thereby giving free access to air and water. This mechanical action is shared by several of its compounds, such as gypsum. powdered chalk, pulverised shells, etc. The common mistakes in the applition of lime as a fertiliser are:—When its chemical action is required on sour, boggy land, it should be spread and ploughed in as soon as possible after being slaked. It is often allowed to lie in heaps for weeks and months, when it absorbs carbonic acid from the atmosphere, and becomes gradually converted into carbonate of lime or chalk. When spread and allowed to remain for some time before being ploughed in, the mischief is still greater. Considerable damage sometimes occurs from over-liming. Since caustic lime greatly promotes decomposition, there is danger of bringing too large a proportion of plant food into available form, resulting in a heavy crop in the ensuing season and comparative barrenness for several years after. It is a common practice to add lime to nightsoil and other animal manures, Caustic lime sets free the ammonia, thus depriving the manures of one of its most valuable constituents.

Stable Manure.

Should It be Used Fresh or Well-rotted?

When manure is heated and becomes well-rotted before it is applied to the soil, the elements of plant food are in a more immediately available form, and can be made use of more readily by the growing crop. A certain amount of decomposition must take place before the elements in the manure are in a form that they can be made use of by the plants. The process of decomposition goes on much more rapidly if the manure is piled than if taken to the field green, consequently if a readily available manure is required it might be better to allow it to rot before applying. This practice is followed with advantage on truck or garden farms, where a quick-acting manure is required, and can be applied each year; but for general farm conditions we would not recommend it. When manure is allowed to accumulate and heat, there is a very heavy loss of nitrogen, the most valuable fertilising element. If exposed to rain, serious loss results from leaching; and through the escape of ammonia in the air, and the loss of nitrates in drainage water, one-half or more of the original fertilising value of the manure is sometimes lost. If it is desired to store manure, the best way is to keep it under a shed where it will be sheltered from rain, and where it will be well tramped by stock.

By this means leaching will be prevented and the heating process retarded as much as possible, but still the loss will be considerable. If, on the other hand, the manure is taken to the field green and spread over the land, the process of decomposition is arrested, and any leaching that may take place will merely carry the fertilising elements into the soil where they are wanted. While manure applied in this way is not so readily available, its influence extends over a much longer period, and this in general farm practice is an important consideration.

One argument that is often advanced in favor of well-rotted manure is that the heat generated in fermentation will destroy any weed seeds that may be present. It is true that some of the weaker weed seeds may succumb during the process of fermentation in the manure; but it has not been shown that any very large proportion of weed seeds is destroyed in this way.

For sandy or gravelly soils, well-rotted manure is usually to be preferred, as the application of coarse green manure is likely to leave the soil too loose and open, and therefore too subject to drought.—'N.Z. Farmers' Weekly.'

How to Enrich a Poor Farm.—If a poor farm is taken in hand by an energetic man who is up to date in his knowledge and practice, it can generally be transformed in a few years into a satisfactory property. The growth of a good green crop by the help of liberal dressings of phosphatic fertilisers is the first step, and afterwards the ploughing under of the green stuff. When the soil is provided with the humus and nitrogen of the green crop, it will begin to improve, and soon pass from the condition of an invalid into a farm of robust condition.

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Practical Garden Book, 4th ed., 1904, by C. E. Hunn and L. H. Bailey. 4s.; posted, 4s. 4d.

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The Young Folks.

A Little Garden Calender.

[By Albert Bigelow Paine, in 'The Delineator.']

'I don't remember when you planted that chrysanthemum,' said little Prue to the Chief Gardener one bright morning.

'No, it was when you were a very little girl—about four years ago.'

'Why don't you have to plant them every year?' asked Prue.

'Why, because you see they are perennials—they live on year after year.'

Prue did not seem to understand, so the Chief Gardener explained.

'There are three kinds of plants,' he said, 'annuals, biennials, and perennials. The annuals live but one season. They come from the seed each spring, and when they have grown and bloomed and made seed for another year they die. Sweet peas and sunflowers and Davy's corn are annuals.

'And radishes and beets,' said Davy.

'No, Davy, that is where you are mistaken.'

'But we have to plant them every spring,' said Davy.

'We do so to get good vegetables for our table. But if we were planting only for seed, we would leave the roots in the ground, or take them up and reset them in the spring. Then they would send up long stalks to bloom and bear seed. Beets and radishes and turnips and most such things are biennials, which means that they bloom the second year and die. They spend all the first year in laying up strength in the roots, to use in making seed the second summer. Some biennials, like the cabbage, lay up this strength in the thick stalk. The strength which they take up from the earth and from the air through their leaves they do not spend in flowers and show, but turn it into food for themselves, and the food is so good that men gather it for their own use.'

'I don't think that is quite right,' said Prue, 'after the poor thing has worked so hard all summer to be ready to bloom next year, for us to take and eat it.'

The Chief Gardener smiled and shook his head.

'I'm afraid that we do not think much about the plants' rights,' he said, 'unless they happen to be the same as our own. And, after all, there are plenty seeds saved every year—more than are ever planted.'

'And are potatoes biennials, too?' asked Davy.

'No; potatoes are perennials. In the right climate they would live on year after year, laying up strength each year for the next season's growth. Dahlias are perennials too, and most of the grasses, and, of course, all trees and shrubs. Pinks, sweet williams, and the hollyhocks are perennials, and live through the winter though they bear a great deal of seed, which shows how determined they are to live on. The chrysanthemums also bear seed, and most plants have at least two ways, and some as many as four ways of producing others like them. Your onions, Davy, can be produced in four different ways. They can be grown from seeds, or from sets, which are little seed onions taken out of the ground and kept through the winter; from bulblets, which are the little onions you saw growing on the top of the stalk last summer, and from multipliers, which are large bulbs broken into several small parts.'

'I should think an onion was surely perennial enough with four ways of keeping alive,' said Davy.

'Do you think that you can name the three kinds of plants now?' said the Chief Gardener, turning to little Prue.

'Yes,' said she, putting out three little fingers, 'Annuals, that have to die every autumn, like my sweet peas; biennials, that have to die every other autumn, like Davy's turnips. Only we don't let 'em die—we kill 'em and eat 'em just when they are ready for their best time; perennials, that have a lot of ways to live and never die at all.'

The Chief Gardener laughed.

'Well, that's pretty good for a little girl. I think we might almost make a poem out of it.

The annuals we plant each Spring,
They perish in the Fall;
Biennials die the second year,
Perennials not at all.

'I've made a rhyme too,' said Prue. 'It's about the kinds of plants, in a different way. This is it:—

The kinds of plants are these—
Herbs, shrubs, and trees.

'Why, I think we shall have to make up some more,' said the Chief Gardener. 'It will help us to remember.'

It was not many days after that the Chief Gardener was digging among his vines, and called to the children, who came running.

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'We were talking the other day,' said he, 'about the many ways that old plants have of making new ones. See how this black raspbetry vine is spreading.'

The Chief Gardener pointed to a long branch that had bent over until the end touched the earth. This end had taken root, and now a little plant was there, all formed and ready to grow the coming year.

'Here is another just like it,' said Davy, 'and another—why, there are lots of them!'

'Yes, the vine sends out many of these long slender branches with a heavy little bud at the end of each to weigh it down. Such branches are called stolons, and when the bud touches the earth it sends out roots. Strawberries have runners which do the same thing. You will find plenty of them if you look in the patch.'

Davy and Prue went over to the strawberries and found that the vines, now red and brown from frost, had sent out runners and made little new plants, like the black raspberries.

'You see,' said the Chief Gardener, 'we pick the berries, which are the seeds, so all berry vines must have some other way of spreading. The red rsspberries do it in a different way. They send out runners too, but they are from the roots, and when the sprouts come up we call them suckers. Many kinds of plants have suckers, and there are some kinds of trees that are so given to sprouting that they cannot be used for shade.'

'What a lot of ways there are for plants to get a start!' said Davy.

'Suppore we try to think of as many as we can,' suggested the Chief Gardener. 'You begin, Prue.'

'Seeds and roots and bend-overs and stuck-ins,' said Prue. 'That's four.'

Davy and the Chief Gardener laughed.

'Well, that is a good start, but there are a great many kinds of roots and 'bend-overs'; but what *are* 'stuck-ins'?

'Why, pieces stuck in the ground to grow. Mamma does it with her geraniums,' Prue explained.

'Oh, slips! I see. Why, Prue, your answer covers about everything, after all. Now, Davy, let's hear from you.'

'Well, seeds—that's one. Bulbs, all the kinds, like the three onion kinds, and maybe other kinds—roots like the red raspberries, that make suckers, and other kinds of roots, like potatoes, and then all the runners and suckers that Prue calls 'bend-overs,' and slips and grafts and buds.'

'Stuck-ins,' nodded the Chief Gardener. 'Prue was about right after all, for there are so many kinds of each different thing, and so many ways, that I am afraid we should never remember all the kinds and ways. 'Seeds and roots and bend-overs and stuck-ins' take in about all of them, and we are not apt to forget it. If you'll come now we'll look at some of the kinds of roota.'

They went down into the garden, and the Chief Gardener opened a hill of potatoes that had not been dug. Then he picked up one of the potatoes and showed it to Davy and Prue

'That kind of a root is called a tuber,' he said. 'Those little spots on it are eyes, and make the sprouts. You remember we cut the potatoes we planted into little pieces, with one eye on each.'

'I remember, and I asked if they had eyes so they could see which way to grow,' said Prue.

'The pieces we planted sprouted, and kept the sprout growing until it could send out roots. Besides the roots there were little underground branches, and a potato formed on the of each branch. When the soil and the season are both good there will be a great many of these branches and new tubers, but when the soil is posr and the season is bad there will be very little beside roots.'

The children followed the Chief Gardener, and dug up a bunch of thick dahlia roots, and he told them how these were really roots and not tubers like the potatoes. Then he dug up some sweet flag, and they saw how the rough root-pieces were joined to one another in a sort of chain of roots, and these he told them were root-stalks, and that they kept a store of nourishment for the new plants in the spring.

'There is grass,' he said, 'that has such a root, and every time it is cut it sends up a new plant, so that every time the farmer tries to get it out of his grain field he only makes more plants, unless he pulls up every piece and destroys it. You see that grass has to fight to live, and it makes one of the best fights of any plant I know except the thistle, which does much the same thing. And that is what all plant life is. It is the struggle to live and grow and spread; the stauggle with men and animals and heat and cold, and with other plants.'

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Treatment of Ferns.

There is probably no other class of plants more readily responding to judicious treatment than ferns, or any more easily ruined by improper culture. Conditions such as over-fertilised soil, excessive heat and a stagnant atmosphere, heavily charged with moisture and constantly overshadowed by a dense coating of paint on the glass afford the sort of high living to which many species of ferns are only too willing to yield. It is not the treatment that will build up the commercial fern. It is the excess in all these details of culture which works mischief, promotes soft growth, favors insects, causes disease, twists and cripples hastily pushing fronds and ultimately leads to premature exhaustion and death. The grower of ferns for his home trade or for the market, whether potted plants or cut fronds, if he is not a specialist, will come as near to being right in the culture of such kinds as he is apt to grow as is consistent with proper management, if he subjects all the varieties to one and the same treatment as regards soil, temperature and moisture. As to replanting, propagation and shading the methods to be adopted must differ.

The soil for small ferns should be a mixture of sandy peat or turfy loam one part, and two parts of leaf mould. As they attain size, beginning with the 4-inch pot, a heavier soil is used and instead of leaf mould well-rotted old hotbed manure is added, and the plants are well crocked. Very firm planting is not good for ferns; but stirring the surface of the soil is a very good plan occasionally. Root-bound large specimen ferns need copious watering and in their case a light dose of liquid food from time to time will be of benefit. On the other hand, ferns newly divided or transplanted or weak and sickly, must be watered with the greatest care, although at no time should fern roots ever become dust dry.

The temperature is right if held at the point of 60 degrees as near as possible the whole year through with a slight lowering at night and a corresponding rise through the mid-day hours. Well established pot plants of nephrolepis, polypodium, gleichenia, nephrodium, some varieties of lastræa, pteris, aspidium and a few others will safely endure quite a cool and fairly dry atmosphere; but the hardening off should be accomplished gradually; a sudden removal from out of a congenially humid temperature of probably 65 degrees to one perhaps not higher than 40 is likely to spoil them as saleable stock; and to get them back into fair condition after that is extremely slow work.

Healthy ferns, uncurling new fronds in continuous succession or a fresh crown growth periodically, need for perfect development of growth a reasonable amount of atmospheric humidity, never to the extent of showing condensation in the form of dripping moisture on the plants or about the house at nightfall. Air also is necessary to counteract stagnation; strong draughts are death to tender young fern growth during the months of winter and at no time especially good for ferns. Shading is necessary for newly planted or repotted ferns, and beneficial, though not absolutely needful, to established and growing ferns. It all depends whether it is employed heavily or continually or with reason. A light shading during the brightest hours of cloudless days is good for all ferns, a point in the proper culture of most evergreen, glasshouse-grown species, even including nephrolepis, if appearance counts as much as endurance in estimating their commercial value.

In propagating ferns by division it is best to cut up or pull apart only such old plants as are still in active growth or just beginning to show new life. Those multiplied by runners from under or over the ground are more apt to send forth an abundance of these in all directions, if given free play under bench culture.—'Florists' Exchange.'

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The Art of Lace Making.

In our advertisement columns attention is drawn to the establishment of the real lace industry in South Australia by the Torchon Lace and Mercantile Agency. Although styled the Torchon Lace Agency the industry is by no means confined to Torchon lace making, but includes all the finest laces made by hand, such as Valenciennes, Brussels, Mechlin, Regency Point, Honiton, Duchess, and many others. Torchon lace is the foundation of the art of lace making, and the student is first taught Torchon, then by easy stages brought to the finest laces known to the lace-making art. To secure operatives in this industry it is necessary to first teach those who are willing to take up the work, and to that end the Torchon Lace and Mercantile Agency are selling their system worked out on patterns and taught by illustrations and instructions on their Princess Lace Looms. The system taught is the latest improved and scientific method of real lace making, simple, easily worked, and effective. Unlike fine needlework it is not trying to the eyes, but when a pattern is once learned the work is quite mechanical, quite as much as typewriting and piano playing. The establishment of the lace industry provides a ready market for disposal of work, and those taking up the work are assured of a ready sale for all work. As a home work it is unrivalled. Many ladies who have much spare time may profitably occupy it with lace making, and although working in the presence of friends none may be aware that the lace is being made for sale. Young ladies leaving school who take up this system are becoming expert in an art that will always be useful to them either as a means of earning money or making laces for themselves which to buy in a shop would be extravagance and possibly beyond their means. A well-dressed woman always appears to better advantage than an ill-dressed one. And real lace on costumes or garments always bears the hall-mark of genuineness against the poor imitation machine-made, which, although

Mrs. Anna Porter,

7 Arcade, Rundle Street,

(GRENFELL STREET ENTRANCE),
ADELAIDE.

Choice Works of Art and Novelties.

Inspection invited.

GEO. TAIT,

Veterinary Surgeon,

Horse Mouth Specialist,

28 years Victorian Practice.

OPERATIONS PERFORMED.
ALL DISEASES TREATED.

249 Rundle St., Adelaide.

TELEPHONE 1,654.

at first appears all right, soon loses its good looks. The beautiful art of lace making appeals to every woman, and we predict a successful career to the South Australian lace making industry as introduced by the Torchon Lace and Mercantile Agency.

Home-made Concrete Benches

At the establishment of Frank Garland, Des Plaines, Ill., the staff uses what spare time is available in the construction of concrete benches in the different houses. The bench is built on the portable principle. Sides, bottoms, crosspieces, and legs are all made separately from different moulds, and any number of them may be made in advance. The bottom sections are hollow, with the edges tapered sufficiently to give good drainage.

The mixture employed in the making of the different sections, with the exception of the legs, is one part of cement to four of gravel and sand. For the legs a mixture of one part of cement to six or even eight of gravel and sand is employed. The side, bottom, and cross-sections are all re-inforced with steel rods. The different moulds are used on a work bench, the concrete being rammed into them, and the steel rods laid in their positions during ramming.

This construction provides a bench which may be moved at any time, in whole or part, as all sections are laid butt to butt, there being no cementing substance used other than a little mastica on the outside of the side pieces to give the appearance of solidity, and this joint is easily broken when required.

One large house at the Garland establishment has been provided with these benches for two years, and they have given every satisfaction.

By Appointment to His Excellency The Earl of Kintore, P.C., K.C.M.G.

BOWEN & CO.,

DIAMOND SETTERS,
GOLD CHAIN and
JEWELLERY MANUFACTURERS,

Gawler Place,

NEAR GRENFELL STREET.

Pipes Mounted and Repaired.

Gilding and Electroplating done for the Trade.

Country Orders promptly attended to.

Masonic Jewels of every description artistically executed with or without enamelling.

Relating to Motor Cycles.

The motor cycle is an ideal example of the transmission of energy, nearly every ounce of power got out of an engine being transmitted to road tyre, the motor cycle being far before any other mechanical means in travelling where the actual amount of power developed is used at the point required with least loss in transmission. Few people understand the many mechanical actions which have to take plase (on an average seventeen hundred times a minute to secure the rated horsepower of a motor cycle engine), such as the opening and closing of inlet and exhaust valves; ignition of the gas drawn into the cylinder through the carburettor by an electric spark timed to explode at the right moment, which can easily be seen, must be very exact to the fraction of a second. This is where the perfect design of a motor cycle comes in, the main essentials being large valves, great cooling and radiating surface to the cylinder, with a good reliable ignition apparatus.

Builders of motor cycles in Adelaide seem to be ready to claim these advantages. The writer called at Messrs. Eyes & Crowle's motor works in Pirie street last week, where he had one of their famous N.S.U. motor cycles explained to him. These machines bristle with advantages over other makes of engines of our knowledge, which probably account for the good name these motor cycles have made in all the competitious they have been entered for in South Australia, being unbeaten to date, and having won and made fastest time two years in succession in the South Australia Motor Club's annual hill climb. On the 14th March last the N.S.U. motor cycles secured first, second, and third places, thereby showing the firm's claims for superiority of design to have foundation, the unique points being very large inlet and exhaust valves mechanically operated, with the great advantage of an additional automatic inlet valve for speed work and hill climbing, another being a gear-driven magneto enclosed in a grease-tight case, overcoming in this way the everlasting troublesome and unreliable eccentric cams which were in old designs, also the bad points in a chain drive for a magneto, in that if a chain slipped the cogs an expert is necessary to retime the ignition, and at the same time always being open to dust and dirt. Another big advantage is that a separate tool tank is provided, making it impossible to lose tools out of a dangling and burst tool bag. Two brakes are fitted, and it is easily demonstrated that a man can stand over the saddle and have his feet on the ground on each side of the machine; this, with length of wheel base, making these motor cycles comfortable to ride, easy to steer and balance in muddy weather.

One of the latest improvements embodied in these motor cycles is the easy manner in which the wheels can be removed to enable the tyres to be repaired. Every rider of a motor cycle will appreciate this. Wide mudguards are fitted, full tool kit provided, brass tanks with oil and petrol capacity capable of doing 200 miles of road work, and last but not least they are equipped with full handle bar control whereby the newest novice to motor cycling can have full confidence that he has at all times complete control of his machine without leaving hold of the handlebars. We must say these motor cycles have a splendid appearance, being finished in four or five different colors for the tanks plain black being the standard color for the frame. Ease of starting is one of the first points every prospective motor cyclist is keen on, and this firm demonstrated to our complete satisfaction this point, and assured us thet anyone calling at their works would have every opportunity of trying these N.S.U. motor cycles in every way before purchasing in runs through the Mount Lofty hills or any desired direction to prove the statements herein contained, and can give reference to many travellers of some of the largest firms in Adelaide as to reliability and durability, which is the largest factor in successful motor running. We left their works quite convinced of the future for these machines, and wish them every success.

WILLIAM CARR,

Furniture Manufacturer and Repairer,

Locksmith, Saw Sharpener.

Carpets Cleaned and Relaid.

All work artistically and promptly executed,

Country orders attended to on shortest notice.

Charges moderate. A trial solicited.

20 Hanson St., Adelaide.

INTERESTING TO SMOKERS.

After doing a steady day's work either in the garden, field, or store, a substantial meal is necessary to keep the strength up and fit one for the next day's work. After dinner there is nothing so soothing as a comfortable smoke, and it is necessary for the man whose means are small to get the very best value for his money. The well-known brand of DIAMOND TOBACCO completely fills the bill, as it is at once the very best value ever offered. To those who like a strong tobacco the dark twist is most suitable, whilst for those whose taste is for a milder smoke the aromatic plugs are specially made. Whilst nearly all other tobaccos have been raised in price through the higher tariff, DIAMOND TOBACCOS are still sold at the old price, which is a sure guarantee the proprietors are doing their best to give the utmost benefit of their stocks to their customers, who seem to appreciate it, judging by the large increase in the sale of this favorite brand.

STOTT & HOARE,
Sole Agents
REMINGTON
TYPEWRITER.

The new Remington Billing and Invoicing Typewriter will make out Invoice, Day Book, and Cart Notes at ONE writing.

SECOND-HAND TYPEWRITERS of all makes for sale from £5. Cash or Easy Terms.

Copying.—We undertake copying of all descriptions. Specifications, Contracts, Price Lists, and Circular Letters. 100 copies Circular, 5s. ; 50 copies, 3s.

Alexandra Chambers, 27 Grenfell Street, Adelaide.
Phone 1030.

The Themodist Pianola.

Ever since the Pianola Company placed its first model upon the market the instruments have been justly regarded as in the front rank of piano players. With all his inventions, however, 'Uncle Sam' is never satisfied until they are as perfect as human ingenuity and skill can make them, consequently improvements have been effected every year in the pianola until at the present time the company has registered over 320 patents in connection with the instrument. Improvements have been made in the blowing until it is now so light as to never fatigue the most delicate performer; the motor action controlling the touch has been developed until an almost human sensitiveness has been obtained, and when manipulated by skilful fingers and feet, the pianola frequently deceives the most critical listener. With all this reduction of labor and improved action there has been no loss in the power and general effectiveness of the instrument; on the other hand it has steadily improved. The most exacting critics have, however, been aware that the pianola, together with all other mechanical players, has lacked one important feature—the power to bring out a theme when other notes are sounded with the melody notes. This was especially noticeable when the melody lay in the middle or bass register. By skilful manipulation, when the accompaniment came just after the melody, former instruments produced admirable results. A new attachment, which is by far the most remarkable piece of mechanism in the instrument, has overcome this last difficulty. This is called the themodist, which may now be inspected at the Pianola Company's showrooms in King William street. With this every subject, whether in single notes, double notes, or chords, comes out prominently without any effort on the part of the performer, who may, as formerly, concentrate his attention upon the expression and finish of the piece. Such compositions as Mendelssohn's Duetto, Rubinstein's Melody in F, and some of the Lizst transcriptions may be played with as perfect a balance of the parts as any concert artist would give. Another improvement in the new themodist pianola, which is fitted with the new metrostyle attachment, is a divided tracker board, by means of which either the treble or bass may be subdued, while the remaining portion of the compass is at the normal power. The high estimation in which the pianola is held by musicians is shown by the large number of famous artists who sing or play to its accompaniment. At the recital given at Aeolian Hall, London, on December 7, 1906, Miss Ada Crossley sang Strauss's Allerseelen, three of Edgar's Sea Pictures, and Nevin's Maying to its accompaniment; and on March 22 of this year Miss Amy Castles gave four items, including Songs My Mother Taught Me (Dvorak), and Solveig's Song (Grieg(, in the same hall, accompanied by the metrostyle pianola.

INTERESTING TO LADIES AND GENTLEMEN.

That attire has much to do with health is beyond question. Mrs. L. Hutton, who is an expert in the construction of "The Improved Health Corset," also abdominal belts, ladies', gents', and maids' shoulder braces, gives absolute value in material and artistic design. Mrs. Hutton controls the depot for the manufacture and fitting of the above articles, as well as the "Champion" shoulder brace. We sincerely recommend our readers in need of such to call on Mrs. L. Hutton, 13 Selborne Chambers, Pirie street, City.

COMMERCIAL AND ORNAMENTAL PRINTING of every description in first-class style, on the shortest notice, and at cheapest rates, at the "Australian Gardener" Office, corner of Pirie and Wyatt streets.

No Increase in Price.

THE OLD FAVORITE

DIAMOND TOBACCO,

Dark Twist, 3s. lb. Aromatic, 3s. 9d. lb.

Obtainable at all Stores, or of the Sole Agents—

W. CORNELL & Co., 55 Rundle Street, Adelaide.

The Dairy.

Keep the Cows Clean.

The greater part of the impurities found in the milk get there within a short time after it has been drawn from the cow and before it leaves the shed. In most sheds the air contains not only a large number of bacteria, but also many kinds of foreign matter. Dirt gets into the milk when in the shed, principally from three sources—from the cows, the milkers, and the air. In a general way (says E. W. Major, Professor of Animal Industry at the University of California) it may be said that the cows supply most of the dirt. Every milking cow should be wiped with a damp cloth just before milking for the purpose of moistening the dirt to prevent its falling into the pail during milking. Cattle soon become accustomed to this brushing and wiping and learn to enjoy it. Sometimes there is a little trouble when the udders are wiped with a cloth, because the cow gets the impression that she is to be milked at that time, and later, when the milker comes along, she refuses to give down her milk as easily as usual. This, however, is only a temporary effect and wears off in a day or two. Care should be taken not to make the parts too wet, or the excess of water will drip into the pail. They should be only slightly damped. In cases where the cow has a good deal of long hair on the udder, conditions may be improved by having the hair clipped. During a wet season, when cattle are walking around in muddy yards, often with udders rubbing on the ground, it takes considerable water to get them even in fair condition. In this case, after washing, the udders should be rubbed dry with a clean woollen cloth. Cleanliness of the milker is also extremely important. We should insist upon his wearing clean overalls and washing his hands thoroughly just before milking. Every one who has been arnoud dairy yards is familiar with the too frequent condition of the milkers' overalls; spattered with milk and covered with dirt, they look as though they would stand alone. His hands, too, are generally dirty, and then, too, he moistens them with milk to make the cow (as he thinks) milk more easily. The milk softens some of the dirt on his hands, and you can see it oozing out between his fingers and dropping off. These conditions must be removed if we are to have milk of good quality. Heifers that are trained to give down their milk easily when milked with dry hands will not cause any trouble. It is a fact that an animal that once becomes accustomed to being milked with wet hands will frequently be a hard milker with dry hands, but even she can soon be taught to give down freely. This is no theory, as the writer has had many years experience and knows whereof he writes.

The Making of Dutch Cheese.

The March number of the 'Agricultural Journal of the Cape of Good Hope' has the following interesting article on the making of Dutch cheese:—

Mr. R. Pape, the recently appointed Dairy Expert for the Transvaal, who has had a wide experience, gives the following particulars in the last issue of the Transvaal 'Agricultural Journal':—

As I have been asked how to set about cheese-making in this country, it may interest readers to hear how cheese-making is still carried on in Holland on several farms. I do not mean to say this method is the most up to date, yet I know some of the best Gouda cheese Holland produces is made in this way. The milk set for curdling immediately after milking. Some farmers trsnsport the milk from the field to the farm in a rowing boat. It used to be the custom to have the cheese tub in the boat, pour the freshly-drawn milk into the tub, and add the rennet—so that the milk was actually curdling during transport. This practice, however, is less common nowadays. For rennet an extract is used which is offered for sale by several rennet makers, and this extract does very well. The usual temperature for renneting is about 86 to 90 deg. Fahr. or 30 to 32 deg. Centigrade. To 20 galls. of milk 10 drachms of rennet extract, 16 grains of liquid coloring material, and 5 drachms of saltpetre are added. This should produce a proper curd in about 30 minutes.

The great point about cutting the curd is to fix the exact moment for starting

MY JEWELLER.

G. W. Cox,

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CLOCK REPAIRS.

Good Work at Moderate Charges.
Watches Cleaned from 2s. 6d.
A well-selected stock of Watches and Jewellery at fair play prices.

1 Rundle Street OPPOSITE Beehive Corner

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THE PHONOGRAPH

are those spent in the home, in easy enjoyment of pleasing melodies.

No need for husband, wife, or children to go to clubs, theatres, or other places of amusement when home is made bright and attractive by the genuine

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You may appreciate classical music and beautiful compositions though you may not be able to render the same yourself. The EDISON PHONOGRAPH will bring this delight to your house regardless of your personal ability. It is the best response to the constant cry of the human race for something to amuse it. It is

The World's Greatest Entertainer.

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Ask us to send you Descriptive Printed Matter and Price Lists, posted free.

Edison Gem Phonograph and 12 Gold-mounted Records, £3.

Edison Standard and 12 Gold-mounted Records, £4 19s. Records, 1s. 3d.

EASY TERMS.

Bullock's Cycle & Phonograph Stores,

Head Office—101 Pirie Street, Adelaide.

Branches: Commercial Road, Port Adelaide; Murray Street, Gawler.

this operation. The dry flat hand is pressed on the coagulated milk, and when this does not adhere any longer to the hand when gently withdrawn, the moment for cutting has arrived. A further test is to insert one finger vertically into the curdy mass and move the finger gently forward; the breaking curd should then show a perfectly smooth fracture, and some clear transparent serum becomes visible. The cutting is done with American curd knives, these quite superseding the old-fashioned implements. The operation lasts half an hour or thereabouts. In the beginning the cutting is slow and gentle, and is increased gradually both in rapidity and strength. This seemingly simple process is the most difficult part of cheese-making, and the quality of the cheese is affected materially by it. All attempts to give an exact description of the cutting, to serve as a strict guide for cheese-makers, have failed hitherto. An experienced cheese-maker will base the treatment of the curds on the observations he makes during the cutting. Nothing definite can be said about the size of the particles of the curd after cutting. I have seen them the size of peas, but I have seen them very much smaller indeed; both yielding a good cheese in the end.

After cutting, the cheese tub is covered (to prevent the loss of heat), the curd is allowed about five minutes to settle, and part of the whey is then drawn off. Then the mass is carefully stirred up, and during the stirring hot water is poured in for the cooking of the curd. In this way the temperature is raised from 96 deg. to 100·4 deg. Fahr.; ten minutes is allowed immersed in hot water or hot whey before it is brought into contact with the fresh curd. Large lumps of curd are put in the vats, broken up by hand (kneading), and pressed into shape again by means of the hands. The vats are left in the cheese tub a few moments for straining, and then the cheese is 'turned'—taken out of the vat and replaced, this time upside down.

Next a clean dry cheese cloth is put round the cheese. The cheese is then revatted and put under the cheese press. Under the press the cheese is 'turned' a few times, and each time should be wrapped in a clean dry cloth, but the majority of makers simply wring the cloth before putting it round the cheese again. The pressure—slight in the beginning—is gradually increased till a maximum of about 8 lbs. for 1 lb. of fresh cheese is reached. The process takes about 12 hours. After pressure the cheese is taken from the vat, the cloth is removed, the 'rim' cut off and then put back again into the vat, upside down. After some time the flat surface of the cheese begins to change to a round one and the cheese is left in the vat till both sides are equally round. Then it is left to float for 36 hours in a brine of 16 deg. Beaume (an instrument for determining the density or specific gravity of brine), to be transferred after this to a stronger brine of 22 to 24 deg. Beaume for three and a half

E. W. ATTRIDGE

17 years with W. F. Gray & Co.,

126 Pirie Street

(OPPOSITE MARVAL'S).

Sheet Metal Worker, Plumber and Gasfitter.

PUMPS. Spraying & Kalsomining Machines, ACETYENE GENERATORS, BATH HEATERS, GASOLENE MACHINES. ELECTRIC BELLS, BATHS and TANKS.

days. In the brine the cheese is turned every day.

Next the cheese is put on shelves in the brining room in order to drip and dry somewhat before it is brought to the cheese curing room proper. There it is placed on shelves, turned every day, and rubbed with a dry cloth. After three or four weeks the cheese is 'watered,' *i.e.*, placed in a tub containing pure cold water, left a couple of hours, and rubbed with a cloth. The 'watering' is done to remove the superfluous salt in the crust. The 'maturing' of the Gouda cheese takes from five to eight weeks, after which the mould (if any) is scraped off and the cheese brought to the market for sale.

Dairy Notes.

Milk contaminated by filth or milk more or less filled with what are called gassy fermentations makes cheese of a very poor quality.

Successful economical dairy feeding depends on the solution of the problem of how to feed more home-grown produce and less bought feeds.

One of the laetst fads is carrot milk for infants. At the Fruitarian Hospital babies are being fed with extract of carrots, instead of extract from cows?

In Ceylon and neighboring countries on the mainland of Asia, there is a race of diminutive oxen which never grow to more than two and a half feet in height. Nevertheless, they are strong, swift, and very enduring.

The first year is the most important in the education of the dairy cow. Gentleness is as important as good management.

Sour cream tastes the same as sweet, for there is no fat lost by the formation of lactic acid in the former.

Mr. F. Henrickson, Sharon, writes:—I have on several occasions read remedies for scours in calves, all of which no doubt are effective, but at the same time cost money, and are not always at hand in the bush. I wish to point out to the readers a very simple cure, and one every dairyman easily can grow on the farm, and, at the same time, being an ornament on any place or garden—namely, pomegranates. Take half of an ordinary fruit, chop it up, seeds and all, and boil in about 1 pint of milk or water; boil it down to about ½-pint, and give it to the sick animal in a bottle. One dose, I have found, will cure it; if not, give it again in a day or two's time Gather all the fruits when ripe, cut them up in thin slices, and sun dry them, and they will keep for a long time, and always be on hand.—'Queensland Agricultural Journal.'

Subscribe to the "Australian Gardener," only 3s 6d per annum, posted to any address Subscriptions begin at any time

HARRY F. KING,

Licensed Land Broker,

House, Land, Estate, Financial, and Insurance Agent.

22 Pirie Chambers, Pirie St. Adelaide

Houses and Land Bought and Sold on Commission.

All Real Property Act business attended to.

Mortgages, Transfers, Leases, and all other documents prepared.

Transfer of Crown Leases a speciality.

Money to Lend on Freehold and other Approved Security in Sums to Suit Borrowers.

Several Nice Farms and Gardens for Sale.

Plant Notes.

CENTROPOGON LUCYANA.—Where odd plants are required, to make the greenhouses interesting, this is indeed a good subject. It belongs to the Campanula order, and is easily cultivated. It should be propagated annually and grown on in ordinary good soil. The flowers, which are borne in panicles at the points of the shoots and along the shoot at the axil of each leaf, are both curious and showy. the color being a bright rose. It should be grown in a temperature of about 60 degrees.

GLADIOLUS TACONIC.—This is a variety of gladiolus raised in America, and is described as follows:—Bright lively pink, flecked and striped with shades of the same color, the petals lightening to the faintest blush in the throat. The markings on the lower petals are deep crimson, running into a thin strip of pale lemon yellow. Plant vigorous and flowers large, 10 to 12 being in bloom at the same time. Under ordinary garden cultivation it attains a height of from 4½ to 5 feet. It is described as one of the most beautiful and artistic varieties.

REINWARDTIA TRIGYNA is a shrubby plant of considerable merit for conservatory decoration. The flowers, which are of a fine yellow color, are produced in winter and the plant continues to bloom well for some time. The greatest difficulty in the culture of this plant is the obtaining of the cuttings. Some of the plants should be cut back. The young shoots do not make good cuttings, as they do not branch enough, and will usually flower prematurely. This plant when in flower is rather fugacious, but if grown in a temperature of 45 to 50 degrees the flowers will be found to last much longer. It belongs to the Linum order, although when in flower people have admired it and mistaken it for an œnothera; and at first sight it does resemble some of the evening primroses.

E. BLACKEBY,

BOOT & SHOE MANUFACTURER,

226 Rundle St., Adelaide.

CUT SOLES A SPECIALITY.

SOUTH AUSTRALIAN CYCLE DEPOT.

Royal Enfield Cycles, £10 10s. to £20.

Beeston Cycles, £8 10s. to £16.

Liberal Terms. Exceptional Guarantee.

117 Rundle St., Adelaide

GLOXINIAS IN FRAMES.—Many florists grow gloxinias for the flowers exclusively and those who do so will find less trouble in growing these plants for that purpose in frames than in pots continuously in greenhouses. When frame culture is decided upon for a certain number it will be well to select the required number of bulbs, picking out the largest and oldest from the stock, and keeping them back until it is absolutely necessary to start them. When that is the case proceed in the same way as if the plants were intended for pot culture finally. The plants may be placed in the soil prepared for them in the frames when the temperature outdoors can be relied upon to suit their requirements. Careful watering is fully as necessary for the successful cultivation of gloxinias in frames as it is in the case of pot culture indoors. The glass should be provided with moveable shade for the protection of the plants from the direct sunlight during part of the day.

GOOD OPPORTUNITIES. — The road to success is built upon a good foundation. Messrs. Priest & James, land agents, of 30 Pirie street, Adelaide, are offering some bargains in orangeries, orchards gardens, etc., also some attractive city and suburban residences and investments. The firm have also paid considerable attention to dairy, poultry, and lucerne farms, and we confidently recommend those seeking property of any kind to call on Messrs. Priest & James, who will arrange to drive intending purchasers to inspect, free of charge.

ADIANTUM FARLEYENSE. — Good specimen plants of Adiantum Farleyense are well worth striving for, and the frequency with which such plants are seen nowadays indicates that after all a great deal of strife is not necessary in the work of producing such, rather that their simple requirements are more commonly understood, and once understood rigidly attended to. One of the very best growers of this beautiful fern adds not a particle of sand or leaf mould to the soil used in potting after the first shift, using instead nothing but the best fibrous loam, adding just a dash of lime. Drainage is of the utmost importance in the growing of A. Farleyense, and the best method of supplying drainage is that of placing a small pot inverted over the hole in the bottom of the larger one into which the plant is to be put, then placing several pieces of broken pots around and over the one inverted, and over all a little dry sphagnum moss.

SOME of the cactus dahlias are suitable and effective for cut flower work. Flowers of one distinct color are the most desirable for decorative purposes, and there are many of these to select from.

MESSRS. MALCOLM REID & CO.

WE have much pleasure in placing before our readers the invitation of Messrs. Malcolm Reid & Co. to send for their illustrated catalogue. This book shows selections from the enormous variety of goods they stock, also new patterns and novelties The rapid growth of their business is a sufficient guarantee of the attention and satisfaction they give their patrons. Intending customers are respectfully requested not to cut out the design, but to give the number and price of any article required.

Geo. K. A. Goslin,

Hairdresser & Tobacconist,

296 Rundle Street East.

Under new management. Completely renovated. No waiting. Cleanliness and civility maintained.

Best Brands of Tobacco, Cigars, and Cigarettes stocked. A trial solicited.

All papers. Agent for the 'Australian Gardener.'

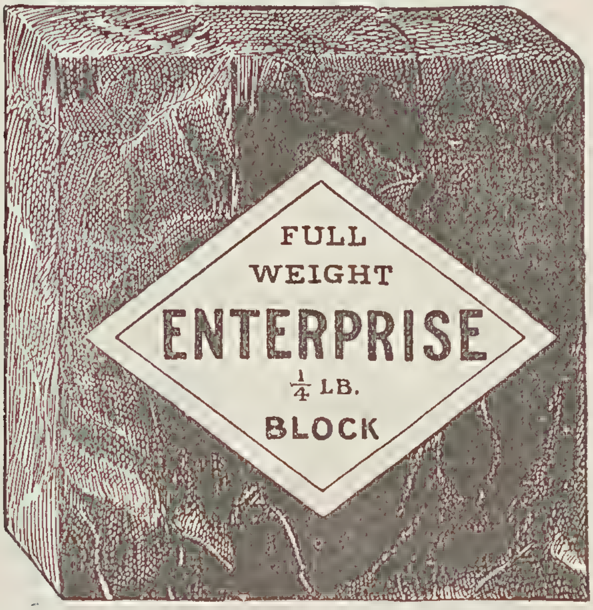
SMOKERS' TREAT.

ENTERPRISE TOBACCO

HIGH CLASS TOBACCO.

Aromatic Gold Bar, 5s. 6d. lb. Dark, 5s. lb.

Nothing better to be had.



Enterprise Twist Tobacco, 3s. 3d. lb

Enterprise Pocket Pieces, 3s. 3d. lb.

The Old-Established Lines cannot be beat. Sold Everywhere.

Sole Agent for the Commonwealth—

N. SOLOMONS, 41 and 43 Arcade, Adelaide.

To Correspondents.

"Forget-me-not."—The origin of the popular name of this plant is a pretty legend. A gallant knight and his ladylove were walking on the bank of the Danube when she espied the pretty little flower in the water. The knight ventured in to get it, but the water was so deep and the undercurrent so strong that, encumbered with armour, he could not regain the bank. As he disappeared he threw the flower to his love and exclaimed, 'Vergess mein nicht'—forget-me-not.

"Irrigator."—Your question covers a lot of ground, like your watering. Water is essential to the life of plants it is true but you must not forget that water is not everything. While you may keep your plants alive with water, they probably do not thrive because the atmosphere is not right. Water from the clouds is very different from water out of a tap.

ATTENTION is directed to the advertisement of Stott & Hoare in this month's issue. This firm are the sole agents in South Australia for the Remington Standard Typewriter, some hundreds of these typewriters being used by the leading Government, mercantile, and legal offices. The Remington was the first typewriter placed on the market over thirty years ago. The new Remington billing and invoicing typewriter is having a very large sale, and numbers of them are being used for invoicing by many of the principal firms in the city. This typewriter is a great saver, making out the invoice, day-book, and cartnotes at one writing. Another department, which should be of special interest to growers, is the typewriting copying office conducted by Messrs. Stott & Hoare. This branch of the business undertakes the typewriting of circular lists of flowers, bulbs, etc., at very reasonable rates (see advertisement on page 18).

THE decorative type of dahlia is well worthy of the consideration of all classes of growers possessing as it does in many of the varieties belonging to it points of surpassing merit. Dahlias of this type are usually borne on stems superior to those of the cactus type for florists' uses.

STRANG & CO.,

Tailors

AND

Mercers,

30 Gawler Place,

OPPOSITE Y.M.C.A.

Orchards Gardens, Orangeries, &c.

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Poultry Yard.

Diseases of Fowls.

(Continued from last issue).

Chicken-pox or Warts.

The above is a blood disease, unknown in England and other temperate climates, is most virulent in South Africa, is prevalent in various parts of the Commonwealth, and particularly around Sydney. Mild cases have been seen in New Zealand, and although of frequent occurrence in the Southern States of America, it is in a simple form, and not regarded with any danger as here, where late hatched chicks succumb to it in thousands annually. In India, South Africa, and America it is known as chicken-pox, and in Australia as warts, affecting chickens only, usually appearing in the autumn, most cases occurring in the month of April. The younger chickens usually succumb to it while in those of from three months and upwards deaths are rare.

Do Poultry Pay?

Yes, if you REGULARLY use
"KONDO"
Poultry Food.

POULTRY FOR PROFIT is a very interesting subject, and one that is not yet definitely settled in this country. However, there is one thing certain, if Hens can be made to lay a large number of eggs, and they do not die from sickness, Poultry-keeping would pay, and pay very handsomely "KONDO" Poultry Food will assist the former, and by keeping the birds healthy greatly reduces the latter.

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It is communicable from one to another, generally going right through a yard, even in birds which the owner thought had escaped, Such might not be the case, as the attack in different subjects is so extreme that one bird's head and eyes may become a mass of eruption, while, in another, of the same brood, the only visible symptoms may be a ruffled appearance of the plumage, and languid gait, but when caught the subject may be just as feverish as the most severe case. This leads some breeders to think that in a country in which chicken-pox occurs, like the measles in children, every one is expected to take them, and in the latter there are cases so mild that it is not unusual for a parent to say that a child never had the measles, when such may have been in a form unnoticeable. The breeders who contend that warts or chicken-pox attack every chicken in the yard, point to the fact that although understood to attack chickens only, there are instances of adult birds taking it, these exceptions being cases which escaped it in chickenhood, and all evidence points to the disease occurring only once in the same chicken, or in other words, chickens which have had the disease become immune to further attacks, and seldom or ever does it occur more then once in the same individual

A peculiar feature of the ailment is that while adult fowls are rarely affected, birds imported from England to any of the Sydney suburbs usually take it, but not until the season of its appearance among the chicks. That is, fowls arriving in say May, June, or July take the disease in the following March or April, the season when it is most rife; indeed it is nothing unusual to see the English birds covered with the eruptions, every other adult in the yard being free, the inference being that the latter had it during chickenhood and are thus immune from further attacks. Ill effects rarely result to adult birds, but many instances occur of chickens, when better of the disease, having during its course acquired roup or other ailments.

The first noticeable symptoms are small pale eruptions or warts appearing about the eyes, head, and nostrils, gradually extending over the comb, and eyes, some specimens becoming actually blind, when they have to be hand fed till the eruption or scab ripens and falls off, while sometimes the case is so severe that one or both eyes are totally destroyed.

Mrs Lance Rawson, the authoress of the "Australian Poultry Book" 1893, then residing in Queensland, told the writer that warts were the most terrible scourge that Queensland poultry-keepers were subject to. In her work she says, "I conclude that warts are peculiar to the warmer parts of the colonies, as I have never seen it in the colder parts. It comes like a scaly eruption, generally about the head, eyes, and nostrils, and by degrees the whole head is covered, the chickens frequently going blind, and if not hand fed will die of starvation. It is wonderfully infectious, seeming to be in the air. I once had three chickens affected, and isolated them at once, but in ten days I had thirty in the same state. The disease has baffled and disheartened many poultry men, 20 or 30 per cent. of the chickens frequently being lost."

In America, the disease, when it occurs is of so mild a form as not to waraent any college experiments, and is dealt with lightly in a book on poultry diseases of that country, as follows :—"Chicken pox is known by the scabby ulcers appearing on any part of the body, and principally on the head and wings. The ulcers exude a liquid, and present themselves in masses and have no great depth. Together with the eruption the bird shows great thirst, and a rise of temperature."

Lewis Wright, the well known English authority, says;—"The diseaae is rare in England, but frequent in hot climates, such as the Cape, Australia, and America. It begins with a whity brown excrescence near the base of the beak, and extends rapidly, becoming yellowish as it does so. It also invades the head and neck, If the nodules are broken, they exude matter. The complaint is manifestly contagious, and isolation and disinfection are the first measures."

The first symptom is the fever, or incubation stage, and rarely observed. After this the rash or eruptions appear; they then grow and spread, change appearance gradually, ripen, become scabby and dry and ultimately fall off, but not infrequently, as with children, leaving some ill results. We have yet no knowledge of the extent of the fever stage of the disease. The observant poultry.man will, however, witness a complete change in the droppings of the fowls, the well-known appearance of that from healthy fowls being changed to a soft yellowish matter, at once indicative of ill-health. The eruption then follows, and, altnough locally termed warts, such term can only be applied to the later stages of the disease when the eruptions become dry and scabby These at the commencement are small, pink in colour and of irregular size, and most noticeable on the comb, which increase in size ultimately running into one another, resulting in a large patch of eruptions, which in the ordinary course would soon dry up aud fall off. Rather than this, however, when the ripening stage is reached they become itchy, the fowls scratch the healing spots, the scab is prematurely removed leaving a raw patch of flesh which is further irritated by mosquitoes, the three or four weeks stage of the disease being thus frequently lengthened into double that time, and often with the loss of one or both eyes.

It most often happens that chicken-pox brings other ailments, roup and diarrhœa frequently resulting and contributing to great mortality.

In the whole history of poultry diseases in this country few have received such varied and contradictory treatment as has chicken-pox or warts.

In almost every instance the fact has been overlooked that the disease is one of the blood, and that these eruptions have to go through a stage of growth, terminating in the ripening of the pox, consequently the remedial measures, just as with measles and chicken-pox in human beings, must be those of an internal nature. Together with the many things on the market for this disease, almost every poultry-man has some home remedy, or as he is pleased to call it a cure. One man told me he cured his fowls by rubbing on the sores grease and ashes; another that gunpowder and grease was good; another cured some Leghorns with kerosene, and giving sulphur pills. The fact remains that several of the above admit that they could not cure the very small chickens, while it is quite possible that those of larger growth which they claim to have cured would in the absence of any treatment have recovered.

Mrs. Lance Rawson, the Queensland authority, evidently realised this when she says "I think the disease is a blood disorder and the only remedy I have found is to mix plenty of sulphur in their food, and give them a good deal of boiled vegetables every day." Lewis Wright says the same thing viz, "That small doses of sulphur should be given internally with tonics and green food, and the spots painted with a 2 per cent. of formalin. When the disease is first noticed an aperient should be given."

(To be continued).

◆

Table Poultry Crosses.

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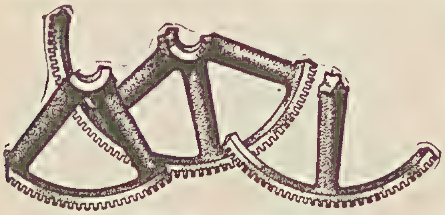

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dictum, and if they are biased in their own favour, so too, possibly is the manager aforesaid, himself a foreigner. But, leaving this vexed question, there is no doubt that our poultry keepers do not make the best of the valuable table breeds we possess. We have in the Dorking the finest table fowl in the world, for while some of the Continental breeds may equal it in flavour, none can equal it in size. It is this conbination of size and delicacy of flesh which makes the Dorking unrivalled. We have also the Indian game, the old English game, and two newer 'made' breeds, the Faverolle and the Orpington, and last, but not least, the Sussex fowl in which the Dorking strain predominates.

Though the Dorking is unsurpassed for the table, very few are sent to market and for a good reason. It is more profitable to cross it. The pure Dorking is a slow grower and the chicks rather delicate. The breed, too will not flourish on heavy land; but where the soil is suitable country gentlemen who wish to have the best quality of poultry served at their tables should keep Dorkings and nothing else. The Faverolle now so popular is nothing but a crossed Dorking, and its origin is interesting. It comes from France, from the department of Eure-et-Loir, the home of the Houdan. This is one of the districts in France, where poultry raising is an important industry. The poultry breeders sought to improve on the Houdan as a table fowl, so they crossed it with the Dorking, and also with the light Brahma, and the Faverolle was the result. It is an exceptionally hardy breed, and flourishes where others do badly. For instance, it is largely kept in Ireland, and, unlike some other breeds has acclimatised itself there The Houden can never be a hardy breed owing to its crest which gets wet and retains the water in rainy weather, and though the French Houdan, bred chiefly for market, has not the huge crest of our show variety of that name, yet this decorative feature is a defect from the utility point of view. The Faverolle has a beard and muffs, but no crest. Two or three years back an interesting test was made of the relative merits of the Dorking and the Faverolle. Two lots of chickens, one of each, were brought up side by side. At about four months old, when big enough for the table the Faverolles weighed more than the Dorkings, but three months later the Dorkings had beaten them.

The value of a hardy quick growing breed like the Faverolle is obvious. It is also greatly used for crossing, and, curiously enough, is crossed with the Dorking. According to the general rule it is unwise to cross two breeds more or less related, but in practice breeders find this cross very satisfactory. As also they do that of the Dorking and Buff or White Orpingtons. The latter owe their table quality to the Dorking strain in them. The logic of the matter seems to be that the more Dorking blood in a table fowl the better. Another Dorking cross is the Dorking-Brahma, which has the reputation of producing the largest framed chickens. Such breeds as the Dorking, Langshan, Orpington, and crossed with the Houdan would be an ideal fowl for crossing for table, but for its dark-colored legs, which for some unknown reason the market penalises, birds with white feet and shanks being preferred.

The game cross—that is to say, the Indian, and the old English—is very popular with any of the breeds named above. The modern or exhibition game should be avoided when breeding for the table. Possibly the most successful of any cross is the Indian game-Dorking. On all occasions except the last it has won the cup given for the best pair of cross-bred fowls at Smithfield Club table poultry shows Farmers and other poultry keepers who wish to breed for market should use one or other of the crosses I have indicated. There are other breeds and crosses which will produce good table fowls, but they will not fetch so much when marketed, and cost just as much to fatten.—The "Field."

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15 CENTRAL MARKET.

June Number of 1908

The Australian Gardener

(A Monthly Journal of Floriculture, Horticulture, Agriculture, and Poultry),

CONTAINS—

The Vegetable Garden—
Operations for the Month

Flower Garden—
The Sunflower.
The Geranium.
Notes for the Month.
Raising Plants from Seed.

EDITORIAL.

The Dairy—
The Kicking Cow.
After-birth in Cows.
What a Grade of Buttor Means.

The Farm—
Science in Agriculture.
Giving Medicine to Hoeses.
Reinforced Concrete Silo.

ANSWERS TO CORRESPONDENTS.

The Orchard—
Treatment of Orange Trees.
Arsenate of Lead Spraying.

The Poultry Yard—
Diseases of Fowls: Chicken-pox,
Beware of Carbolic Acid.

The Young Folks—
The Life Story of the Common Arum,
&c, &c., &c.

EDITORIAL.

THE June number of "THE AUSTRALIAN GARDENER" contains thirty-two pages. This success in the publication is beyond our expectations, and the generous response of our clients and subscribers to enterprise of all concerned is exceedingly gratifying. We yeild with great good will to the demand upon our space and are quite prepared to extend the publication by an equal number of pages every issue to keep pace with the wishes of the public demand for a publication so full of practical matter to the producer, from a commercial point of view, and those who read for information upon subjects of interest in the garden, on the farm, and the dairy. This extension of the publication will now go on until it stands in the forefront of technical literature and we shall be able to present to our readers the cheapest and best of its kind in the States. As the means for advertising produce, agricultural requirements, and the thousand and one accessories to homes in and around the city and in country life there is perhaps no better medium. In addition to this the buyers and sellers of land for farming, gardening, and suburban settling will find in the columns of the GARDENER information where to go and who to go to for the best advice.

The articles come from the best sources and are in all cases absolutely reliable. This month the kitchen gardener will find just what he wants to know about vegetable growing. We never could understand why the kitchen in every house that has a yard or two of ground to spare should not be supplied with fresh vegetables. Any man or woman can scatter a few peas and beans about on a bit of turned up ground, and they will grow into a dish of vegetables that cannot be bought from the greengrocer. We do not advocate such a means of growing vegetables but merely mention it to show how easy it is to do For instance, a piece of ground 4 or 5 feet long and a foot wide will grow enough mustard and cress to keep the table supplied with a delicate bit of salading for cold meat for weeks. How much nicer it is to have a tasty bit of salading of mustard and cress, or lettuce, or radishes, than simply dry cold meat alone. The trouble is a mere nothing but pleasure in the day's routine. and the result is alike gratifying and pleasant. This, too, is not only for to-day or to-morrow, but can be carried on all through the year. Every month we publish the list of good things to be had for the dining table.

Nobody likes to be without flowers for the house both inside and outside, but the greatest satisfaction is always found in having some, if not all, of the best. Why not. Buy them? Well, yes, some people find some pleasure in spending money on the purchase of flowers. We have nothing to say against that. It is good business for the florist. But we have a lot to say about the pleasure of growing flowers, the best, the prettiest, the daintiest, and the freshest flowers for the front garden, the side garden, the back garden, on the fences, over the outhouses, all over the house in fact. Everywhere there should be flowers to gladden the heart and please the eye. They cost so little and give so much pleasure. Now is the time to get the bulbs growing for the earliest dawning of spring. Have a succession of them. Put some in every week and flowers will come and keep on coming without a break. Thr article on raising plants from seed will tell the gardener how to do it. The old-time Geranium has an article all to itself. Was there ever a garden anywhere without a geranium in it. But do not be content with one or half a dozen. Have a lot, and have them all of the best. It is just as easy to grow the best as the worst. Any nurseryman will tell you that. He will also be only too happy to tell you the how and when and why. Ask him. He won't mind in the least, and you will be good friends for ever after. It is his business to make friends, to encourage them to know things, and it is your business to find out things that will make life happier than it is. There is no recreation in the wide world so gratifying as gardening.

The young folks are again remembered in this issue. We have received many pleasing references to this column introduced last month. All children are fond of flowers and all children should be taught to grow them. They never forget it, and it is part of a lifelong education which gives them perhaps more genuine satisfaction than anything else they may have learned.

Agriculture is well looked after in this issue, and some interesting information may be gleaned from this source.

The article on diseases of fowls which has found so much favor amongst poultry keepers is continued. A warning regarding the use of carbolic acid is given.

The Orchardist has two articles that will repay him to read, especially the fortunate proprietor of an orangery.

The Dairy is also supplied with some useful information.

The Vegetable Garden.

TREE ONION.

Operations for the Month.

Although we are now in mid-winter, the winter in this State is generally so mild, when comparing it to such winters as those experienced in Canada, other parts of North America, and the northern portions of Europe, that we have no difficulty in raising a sufficient supply of nearly all the best sorts of vegetables that can be grown.

Artichoke, Globe. — Some suckers or young plants may be put out during the month, but this may be delayed, if necessary, until nearer spring. Plant about 3 feet apart, and if the soil is dry, they had better be well watered after planting.

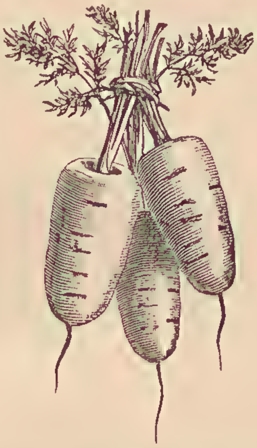
Artichoke, Jerusalem.—This is quite a different vegetable to the above, and in no way related to it, and properly speaking is not an artichoke at all. It is a native of Brazil. It is a remarkably easy vegetable to grow, and will succeed on almost any kind of soil if it be well dug and well manured with old rotten manure. Over-manuring is apt to cause the stalks to grow too rank, and then the tubers will not be so plentiful. It is an excellent vegetable, as well as a wholesome one, and it should be grown in every vegetable garden. The tubers had better be planted as soon as they can be obtained, as they will not keep out of the ground for any length of time. Make rows about 3 feet apart, and plant the tubers along these rows about 1 foot apart, and about 5 inches deep. Cover with soil and keep free from weeds. Endeavours are being made by seedsmen in Europe to raise tubers as smooth as possible, and it is most probable their efforts will be crowned with success.

Beans, Kidney.—These may be sown in the warmest parts of the State, and only in places free from frosts.

Beans, Broad.—The present month is a suitable time to sow to any extent. This vegetable prefers a stiff soil, but will succeed fairly well in any soil if it be well manured. Sulphate of lime will be found to improve the quality of the beans considerably. Superphosphate of lime is also useful. Manures rich in nitrogen should be avoided.

Cabbage.—Sow a sufficient quantity of seed to meet requirements. Sow also some seed of the red or pickling cabbage, for it will be found to be useful. The pickling may be done without any difficulty. The cabbage should be cut up into fine cross-slices, and covered well with salt for about three days or more. The salt should be rubbed well into the cabbage occasionally. Then place the cut-up cabbage in pickle-jars, and pour in and cover with boiling vinegar. Allow it to cool, and then cork the bottles securely. This may be used at once. They may be planted out as required.

Endive.—Sow a little seed in the warm parts of the State. It is a native of a warm climate, and therefore succeeds well in warm places, although some varieties will grow well almost anywhere.



EARLY SHORTHORN CARROT.

Carrot.—Sow a few rows of this useful vegetable, and thin out former sowings. The small carrots thinned out need not be thrown away, for they can be used in soups. Try Early Shorthorn variety.

Leek.—This is a good, useful, and wholesome vegetable, and should be grown largely. Sow a good quantity of seed in a seed-bed. If any fair-sized seedlings are available, plant them out in very richly-manured shallow trenches. Some of the best varieties are London Flag and improved Musselburg. The trenches should be about 18 inches apart, and the young leeks should be planted deep in the soil, about 9 inches apart. The leek is a greedy feeder, and needs abundance of manure and water to bring it to the greatest perfection.

Lettuce.—Sow a little seed, and plant out strong seedlings from the seed-bed. Remove them carefully, and, if possible, without breaking their roots.

Onions.—Sow a little seed, and attend to seedlings which are coming up from former sowings. They must be kept quite free from weeds. Thin out as the plants become strong. Spread a dressing of soot and salt, half and half, about the young onions.

Parsnip.—Sow a little seed; thin out former sowings, and keep down the weeds as they grow.

SEA KALE.

Peas.—Sow largely, in rows about 3 feet apart. When the plants are about 3 or 4 inches high, stick in some light brush or sticks along the rows for the peas to climb over. Be careful not to make the brush too dense and thick or the plants cannot grow. The seed should be put about 4 inches apart in drills, which should be about 3 or 4 inches deep, but not more.

Radish.—Sow small quantities of several sorts. Some are round and others long. Use them before they become large and hard.

Herbs.—Divide any old plants and replant.

Salad Plants, such as mustard and cress and radishes, may be sown from time to time as required. Tender radishes are always useful, but all that are hard, pithy, or overgrown should be pulled up and thrown to the pigs or chickens.

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1 Fender and Fireirons,
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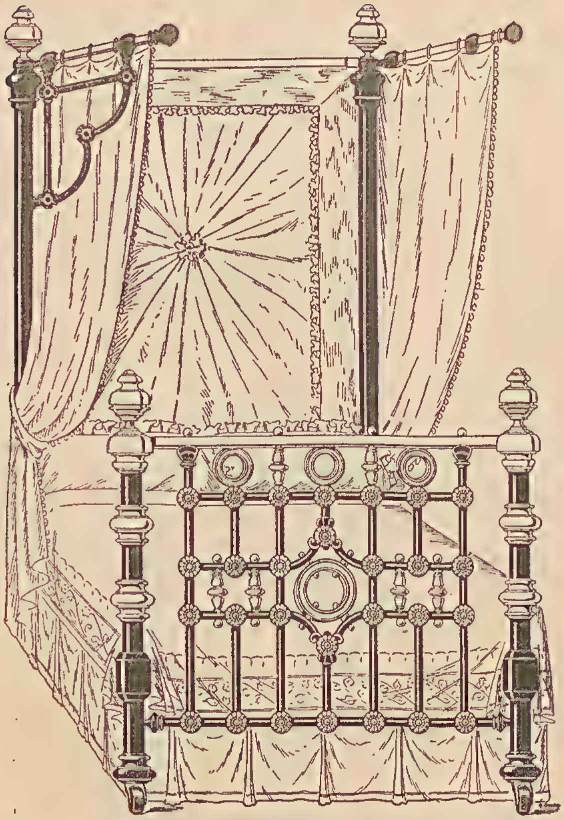

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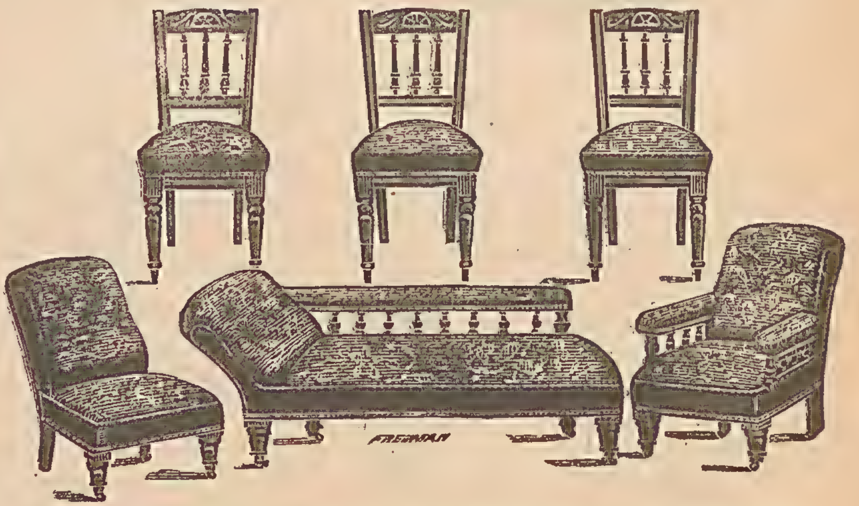

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The Flower Garden.

MINIATURE SUNFLOWER 'STELLA.'

The Sunflower.

[By J. Cronin.]

Helianthus—the Sunflower—is a genus containing about fifty species of annual and perennial herbaceous plants, found native in America, the majority occurring in North America. Most of the species and their varieties are tall growing plants, producing large flowers yellow in color in their ray florets, the disc florets varying in the different species. The annual kinds are well known and popular garden plants of easy culture and ornamental value; among them are many improved forms, of which the miniature sunflowers are possibly of most value, producing as they do quantities of flowers of moderate or small size that are very effective in the garden beds and useful for decorative purposes as cut flowers. Among the perennial kinds are many that are worthy of cultivation in any garden, the later raised florists' varieties being especially fine. Double and single forms exist in both the annual and perennial types, and although the color of the flowers is uniformly yellow there is a deal of variation in the different groups or varieties.

The common sunflower (Helianthus annuus) is a plant of considerable economic importance and is largely cultivated in Europe, Asia, and America for its seeds. According to 'The Agricultural Ledger,' 1907, No. 1, an area of 216,000 acres is devoted to sunflower culture in Europe alone, the average return being roundly stated at about 50 bushels of seeds per acre. In Russia where the sunflower is most extensively cultivated the seeds are eaten, raw or cooked, or used for the extraction of oil which is said to be excellent for table use, and may be substituted for salad or olive oil for all domestic purposes. The seeds are also of considerable value as food for birds, and are largely used in America for fattening poultry. The oil cake which remains after expression of the oil forms a valuable cattle food, being of great nutritive value and easily digested, while the leaves and stalks also possess highly nutritious properties.

From data derived from experiments and analyses of the plant it is evident that the sunflower requires a fertile soil, and that during cultivation it is also necessary to maintain the fertility of the soil upon which the plant makes considerable drain.

Any fair garden soil is suitable, if well and deeply worked and manured. Although the sunflower is a plant that will thrivet fairly in poor soils, and with a limited supply of moisture, it is found that a moderate supply of manure and either good cultivation, to conserve moisture, or irrigation is necessary to obtain maximum results. The soil for the reception of the annual kinds should be prepared some time prior to the season for sowing seeds in spring. September is the most suitable month for such sowing, early or late, according to liability to frost. The soil should be finely broken and divided before sowing and the seeds sown at a depth of about 2-ins The tall varieties are suitable for growing in masses at the back of large borders, while the miniature kinds should be allotted positions suited to their height—about two feet. Seeds of the miniature sunflowers may be sown in clumps, allowing six inches for each plant, but the larger varieties should receive much more room—one foot between the plants at least.

HELIANTHUS GLOBULOUS FISTULOSUS.

The herbaceous kinds are propagated from divisions of the old plants and from seeds. Seeds should be sown in spring and the young plants set out as soon as ready to handle, to insure a fair season of growth before the blooming season. Divisions should also be planted in spring, the plants blooming so late into autumn

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that dividing at that time can only be done at the expense of the crop of flowers. Established plants should be divided and replanted into fresh soil in alternate years; if allowed to remain longer, the shoots become crowded and small and the blooms inferior. Varieties and kinds are: — Perennials: multiflorous, Soliel d'Or, multiflorous maxima, rigidus, Maximilliana, Childsii, mollis, and Miss Mellish. Annuals: Orion, miniature (single and double), Stella, Silver Queen, globosus fistulosus, Henry Wilde, and large Russian, the latter being the best for the production of seeds for poultry, etc.—Journal of Agriculture, Victoria.

Geraniums.

The geranium still leads all other plants for bedding. Its period of blooming is from early Spring until the snow flies, and no other variety of plant will stand so much abuse and still grow and send up large clusters of flowers, bidding defiance to their neglected treatment. On the other hand, if in a good location, in a moderately good soil and given fair treatment geraniums will respond with the greatest profusion of handsone trusses the entire summer.

There are a great many varieties at the present time which are all splendid bedders. The old single sorts, which were ufed so successfully from 15 to 25 years ago, such as General Grant, Queen of the West, Rev. Atkinson and General Sheridan, have been superseded by such grand varieties as S. A. Nutt, introduced by the veteran florist, John Thorpe, Alphonse Ricard, John Doyle, Marquis De Castellane, Beaute de poitevine, Jas. Vick, Grancis Perkins. Pink Bedder, Double General Grant, and many others.

The first thing to be considered for a geranium bed is the location, which should be the brightest and sunniest spot available. Many times I have been called upon to plant a bed of geraniums, and on arrival found that no preparation had been made to receive the plants; and I will say right here that everyone contemplating setting out any variety of plant should have everything in readiness, beds all spaded and raked a little higher in the centre so as to drain off all surplus water; that the plants can be put at once. It is the duty of the florist who is to do the planting to first see that a proper location has been selected and prepared to receive them, for in the height of the planting season time counts. In cities where a large amount of bedding is done, it is a very good plan to send a man beforehand to see that the beds are ready to receive the plants.

After the location has been decided upon the next thing to be considered is the soil, which should be a good clay loam and not too rich, say about one sixth good well rotted stable manure. if the soil is too rich it will induce a long spindly growth, and very few flowers; while on the other hand, with short stocky growth they will bloom more profusely. As the main object in view is flowers, everything sdould be done to make these and not growth, and the proper way is to keep the plants at all times a little on the dry side. Never let any water get on the flowers, if possible to avoid it. Watering is one of the most essential things in properly caring for geraniums. As a rule, almost everyone seems to think that in order to get flowers. the plants must be soaked every day; but such is not the case. One or two good waterings a week will be sufficient to induce the plants to throw up flowers instead of long lanky growth.

If the foregoing brief cultural direction is carried out, the plants will remain healthy and give a profusion of flowers the entire season.—N. B. Storer, in 'The Florists' Exchange.'

Notes for the Month.

During the month of June a great deal of useful work can be done towards making new gardens. Wherever the leaves have fallen from roses and other deciduous plants, such plants may be removed and replanted. Plants ordered from nurserymen may arrive during the month, and these should be planted out as soon as it can be done. When planting, examine the roots of each plant, and remove with a sharp knife all that are broken and bruised, and make as clean a cut as possible. The pruning of roses should be deferred, especially in the cold districts, until just before spring begins.

FLAKE CARNATION.

DIANTHUS PLUMARIUS, FL. PL

This is a good month to clear out rubbish from all overgrown gardens. Apply a good heavy dressing of manure, and dig it in amongst those plants which are worth preserving.

The ever-popular carnations may be planted now or at any time of the year convenient. Those known as the tree or perpetual flowering varieties are the most satisfactory to grow, as they bear flowers nearly all the year round. These plants will succeed in almost any kind of soil, provided it be well dug, drained, and manured with rotten farmyard manure. They will not stand severe drought, but they can be preserved if mulched and watered.

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Kentucky Blue Grass (Poa pratensis)—Perennial, well adapted for light soils, much liked by stock. Sow 20 lbs. to acre.

Italian Rye Grass.

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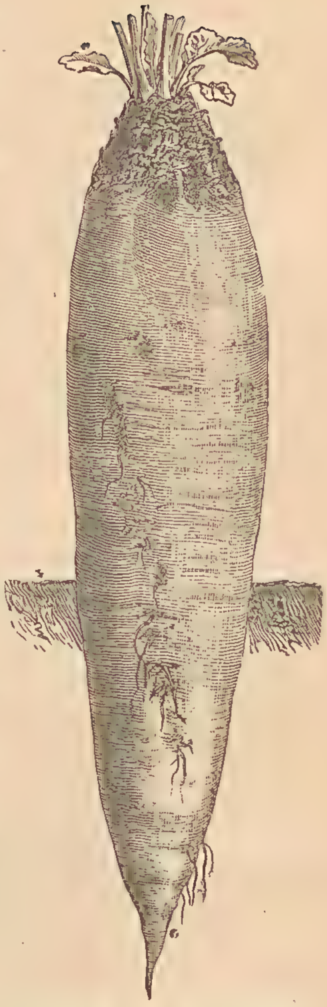

Mammoth Long Red Mangel.

Yellow Trefoil or Hop Clover (Medicago lupulina)—A fibrous-rooted biennial, very productive, produces early Spring crop; largely used in S.E.

White or Dutch Clover (Trifolium repens perenne)—Sow 8 to 10 lbs. to acre.

Red Clover (Trifolium pratense)—Sow 10 lbs. to acre.

COW GRASS or PERENNIAL RED CLOVER, Mammoth Clover (Trifolium pratense perenne)—Sow 10 to 12 lbs. to acre.

LOTUS CORNICULATUS (Birdsfoot Trefoil)—Deep-rooting perennial.

TRIFOLIUM SUBTERRANEUM—An annual of very spreading habit. In good soil one plant will cover 6 feet, producing a wonderful quantity of excellent fodder. 1/- pkt.

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Raising Plants from Seed.

The following interesting paper on the above subject, read by Mr. G. Williams before the Central Queensland Horticultural Society at Rockhampton, is taken from the 'Agricultural Journal' of that State :—

The propagation of plants by seeds is the most natural mode, and is generally considered the most satisfactory, excepting where the exact counterpart of a plant is desired. With some plants, more particularly amongst those of a ligneous nature, and which have been improved by cultivation and selection, the tendency amongst seedlings is frequently to revert to the original. Though an occasional further improvement may be noted or brought about artificially, this is exceptional. Consequently, other means are employed to propagate and diffuse such varieties with their true characteristics.

In connection with the raising of plants from seeds, the essentials of success are briefly, that the seeds have been properly ripened and properly kept till the period of sowing, and that they may be sown in a proper manner under favorable circumstances. As to perfection and maturity, this is a matter over which the planter has usually but little control, being mainly dependent on the agency of others to procure his supplies. Consequently, the seedsman gets quite a full share of the blame for non-generation. The fertility, particularly of small seeds, cannot well be determined without the aid of a microscope. Simple tests have been recommended; but their application can only be reliable in the case of large seeds, and it is usually to those of small size that the horticulturist is indebted for failures. The length of time which vitality remains unimpaired must be considered in respect of perfection, for whilst in some it may be almost indefinite, in others it is very brief. With herbaceous plants the period is more or less extended, though frequently does not amount to two years.

The time when seeds are self-sown is frequently quoted as being the most suitable for propagating the species with the greatest degree of certainty in the absence of cultivation; but this is hardly likely to commend itself for general application, particularly amongst annuals and perennials, if for no other reason than that the attendant inconvenience consequent upon the space of time which would frequently elapse before germination. With trees and shrubs the keeping qualities of seeds vary considerably, and these, being cultivated with a different object to plants of herbaceous nature, should, as a general rule, be planted at the earliest opportunity after ripening. Those of many of our cultivated fruits will not remain fertile for any length of time, and commence to germinate almost immediately after, and, in some cases, previous to planting. The germination of others, though, possessing keeping qualities, is greatly accelerated by immediate planting. The conditions under which seeds are stored must affect their vitality, as the external agents essential to vegetation are water, heat, and air.

The principle of seed-sowing is never to bury the seeds deeper than is indispensable to the preservation of moisture around them, and it is generally accepted that they should be planted beneath the surface about the same depth as the extent of their own diameter, and those of a very delicate nature immediately on the surface, provision being made for the supply of the necessary moisture by capillary attraction. The covering with earth is to be regarded mainly as a method of preserving around them the necessary moisture rather than, as frequently supposed, as a means of guarding them from light, for, if deposited on a damp soil and covered with a plate of glass closely pressed down upon them, they will germinate as well as if in darkness. Seeing that the preservation of moisture (which, except in rare instances, must not be excessive) is one of the main factors in stimulating germination, it is indispensable that the top soil at least is of a constituency best calculated to maintain a moist but not sodden condition. Fine, light, and rich soil, or a compost containing peat and leaf mould, is considered most favorable to the growth of nearly all seeds, though it is advisable, particularly where it is proposed to transplant the seedlings, that the fertility be not too intense, or an over-luxuriant growth, and consequently instability, will result.

Though seeds will germinate with due supplies of heat and moisture, a fertile soil is essential to further progress, and it is found from experience that seeds of some plants do not vegetate in a strong loam, though the plants afterwards flourish in soil of that description. Experiments have been made on the vegetation and growth of plants in pure earths, and also in these with the aids of stimulants and manures. It might have been supposed that the pure earths, with the addition of artificial manures, would have answered as well as a compost of peat and loam, but the result proved quite the contrary. A moderately open and fertile soil will give best results, and tend to sturdy growth and general fitness of the young plants to withstand transplanting, though the effects of light and watering must be considered in this connection.

For starting annuals and perennials for transplanting, except those of a very delicate nature (where pots or seed pans had perhaps better be employed), shallow boxes, with a suitable shade or covering to protect damage by heavy rains, and also as a protection against the sun's rays, are also satisfactorily utilised. There is some diversity of opinion as to whether seeds should be planted in a damp soil, a comparatively dry soil and watered immediately after planting, or allowed to absorb moisture from the surrounding soil for a varying time, according to the nature of the seeds, before watering. With field crops, more particularly those bearing small seeds, planting in comparatively dry ground has its advantages, for the seed has under ordinary circumstances filled out through the agency of moisture by absorption, and bursts almost immediately on the application of greater supply, the young root, or radicle, being pushed down to a sufficient depth to maintain that necessary for future development. If planted in moist soil shortly after rain, germination is stimulated, but slower in action, and, in the absence of further rain, the drying of the surface may be so rapid that the young plants perish through the inability of the radicle to penetrate the soil to a sufficient depth in time to meet the requirements.

The effects of light and shade are very pronounced on young plants. Just how much shade is required can only be gauged by observation and experience. The effects of the direct sun's rays on those of a delicate nature would be disastrous, whilst the absence of sufficient light would cause a weak and drawn growth. Overwatering may also have a tendency in the same direction, and before transplanting increased light and less water will tend to harden the young plants, that they may be better able to withstand the shock.

Insect pests are frequently troublesome, destroying the young plants indiscriminately. Those which inhabit the soil of pots, etc., may be displaced or destroyed by hot water, which, though death to all insects at a temperature of 120 to 125 degrees, does not appear to injure plants. Its application to foliage is unsatisfactory owing to the difficulty of maintaining the temperature, which immediately drops when a spray is made. The vegetable-grower finds his investments in seeds of the Brassica family a dead loss owing to the persistency of small caterpillars that apparently await the appearance of the young plants above ground, and attempts to destroy the pest with insecticides usually result in the destruction of the plant also. Caterpillars which attack the plants in this manner are the larvæ of small moths, which are seldom seen in the daytime, and, consequently, escape the blame to which they are entitled. A simple and effective barrier against their inroads may be made by covering a small frame—either for boxes or open ground—with mosquito net, and keeping the plants under cover until they are large enough to transplant, when the liability to damage from the same source will be greatly minimised. The presence of an injurious fungus amongst young seedlings is sometimes noted, and may occasion the loss of the whole stock. It generally makes its appearance where leaf mould or other regretable substance which is not thoroughly decomposed has been used, or where plants are overcrowded and not allowed sufficient light.

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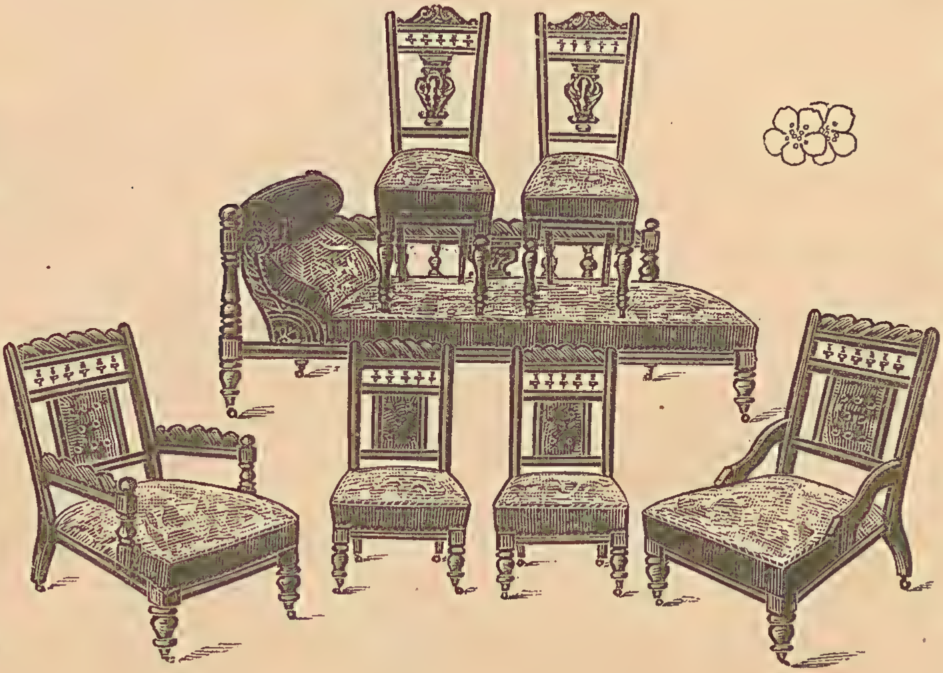

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The Dairy

The Kicking Cow.

A common question asked all round the world is how to deal with a kicking cow. The proper reply to this inquiry (says 'Dairy') is: Do not keep a kicking cow. At the same time, every dairyman knows that kicking, as applied to cows, is a relative term, for, in one sense, every cow is at some time in her life more or less handy with her hind feet. A confirmed old kicker, one that appears to go asleep while you are filling the pail, and just as it is filled discovers a fly on her belly, and makes a vicious lunge at it. Well, we would write that cow's obituary on short notice. You had better not trust her, if you are satisfied that she kicks from habit rather than from some disturbing cause. In the latter case you must look for the trouble and remove it. She may be naturally sensitive or tender about the udder and teats. In that case, the milking should be begun slowly, and continued cautiously, while the cow is uniformly treated kindly. No other treatment will effect a cure. When a cow, having some local trouble that with proper handling will wear off, is treated roughly, and especially if she is tied up, or other elaborate precautions are taken against her, she is almost certain to become a confirmed kicker, for the reason that the milker, feeling safe, is sure to be rough with her, and hurts her to that degree that she resents it, and learns to dislike being milked. Especially is this the case with heifers. Bear with them to the last limit of your patience before putting them into any kind of harness. A man with a strong left arm by a quick motion can stop the blow before it gathers headway, and thus discourage the heifer before she learns how much mischief she can do with her hind feet. Those dairymen who have cows that need to be legroped to milk do not know that this is a sign of a poor dairyman. No one ever saw such a thing in a well-regulated dairy. They are as useless as they are a nuisance, and the man who has not the patience to cure the fault, provided he is a young one, had better go into some other kind of business.

After-birth in Cows.

Sufficient attention is not given by dairymen to the 'cleaning' of their cows after calving, and the retention of portions of the placenta, or after-birth, is a frequent cause of sterility and abortion in these animals.

Naturally the 'after-birth' comes away cleanly of its own accord. Occasionally it is retained for over twelve hours, and in these cases it is necessary to adopt treatment. Often the administration of a drench containing the following brings about the desired result:—One ounce ammonia carbonate, twelve ounces sulphate of magnesia (Epsom salts), two ounces common table salt, and one ounce of powdered ginger. Dissolve these with two pints of warm water or ale, and add a cupful of treacle. When thoroughly mixed the drench is given by the mouth with usual care.

If the 'after-birth' remains intact after the drench has operated it is necessary to render assistance by passing the hand and arm, lubricated with carbolised vaseline, into the womb, and exercising gradual traction.

If the whole of the membranes have not been completely removed, and the discharge becomes fœtid in character, the womb should be irrigated in a manner similar to that practised in cases of contagious abortion. To do this all that is

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required is about one and a half yards of rubber tubing, 1 inch in diameter, and fairly stout; a glass funnel (bottle with bottom knocked out will answer), and a supply of corrosive sublimate in tabloid form. The funnel is attached to one end of the tubing, and the other end, after being lubricated, is gently passed by means of the hand into the mouth of the womb. The corrosive sublimate is dissolved in water in the proportion of one part to 3,000 parts, and then poured into the funnel, which is held higher than the animal, so that the fluid passes into the womb. When the womb has been irrigated with a sufficient quantity, usually about a quart, the animal ejects the fluid, and frequently portions of the retained membranes will come away at the same time.

This treatment should be repeated daily until the discharge assumes its natural appearance or ceases. The buttocks and tail should also be washed down with the corrosive sublimate solution, which is a reliable germicide.—Jas. D. Stewart, M.R.C.V.S., in 'Agricultural Gazette of New South Wales.'

Residuum molasses from the sugar beet factories is used in Europe as a food for all kinds of farm stock. It is fed either diluted with water as a drink, or mixed by the feeder with a variety of substances such as cut hay, finely-ground straw, brewer's dried grains, malt sprouts, wheat bran, coconut cake, dried beet-pulp, and dried potato residue.

What a Grade of Butter Means

A brand of butter carries with it the reputation of the factory from whence it came, and it is in London that this very forcibly appeals to one (says Mr. G. S. Thomson, the Queensland Government Dairy Expert). Standing around a heap of boxes, each with its lid off, the visitor sees butter-graders testing the quality and honesty of brands, for upon these conditions its popularity and prices depend. If all is satisfactory, the brand adds to its good name, and, if this is repeated regularly, the factory producing the butter and the State or country exporting it win the confidence of merchants and their patrons, and thus the foundation of a successful and profitable career is established. But, on the other hand, if the butter is not up to the standard of the factory's choicest brand (which is portrayed with the name of the factory on the boxes), is mixed in quality, and under weight, the reputation of that factory is seriously endangered; and, should this occur several times, merchants will not treat the produce with that confidence which is essential to the success of the factory. And how far does this bad news travel might be queried by the farmer whose future depends on the factory? If is passed from merchant to merchant, and my experience in England has shown me that the finding of such serious defects is generally made in the shop of the country grocer, with disastrous results to the factory and injury to the State. Several times I have seen the produce of our factories (choicest brands) returned to London, not being up to the standard of guarantee of the factory; and the producer may judge the reasons why butter does not realise a price in accordance with the best efforts of the intelligent and progressive dairy farmer.

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CITY, close Hanson Street—Detached stone house, 4 rooms, etc £315.

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CROYDON—3 acres close station, rising neighborhood. £150.

NORTH UNLEY—Residence, 8 rooms, bath, pantry, cellarette. Enclosed area, lavatory, stables, trapshed, 1-16th acre. Only 1-8th mile walk G.P.O., close penny section. £890.

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CITY, East Part—2 cottages, 3 rooms. verandahs, £400; rents, 14s. 6d. weekly.

PENNINGTON TERRACE, NORTH ADELAIDE — Residence, 6 rooms, bath, etc, stables, trapshed. £700

the brands of butter bearing the Government stamp from the barges to the warehouses, he wauld probably have read a simple lesson of the value of official inspection. But it does not begin or end here. Careful examination conducted by me in London proved the valne of the Government stamp in describing the quality of the produce, and in this the importer finds safety in his sales, likewise does the grocer, and in turn the consumer will be protected. Just imagine for a moment what dosultory results would follow if the dairy produce of Queensland, when not true to the factory brand, is put on the market without an official mark to denote the grade. Without the protection which the mark affords, it would not take long to drag the industry back to the miserable place it held five years ago. And here I might again remind the producer that it is a fallacy to think that the Government stamp acts as a lever to the buyer to attain greater profits; it is not so, for the manufacturer is virtually compelled to pay a higher figure for produce when it can always be depended upon, and to stamp the butter is to show that the State is acting in the best interests of the farmer, factory, and trade. For a convincing answer to this I refer the reader to the high and steady prices of New Zealand butter, every box of which is stamped with the grade; and, had the producer accompanied me in my travels in Great Britain, ample scope would have been given him to determine the means of the Dominion's success.

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The Farm.

Science in Agriculture.

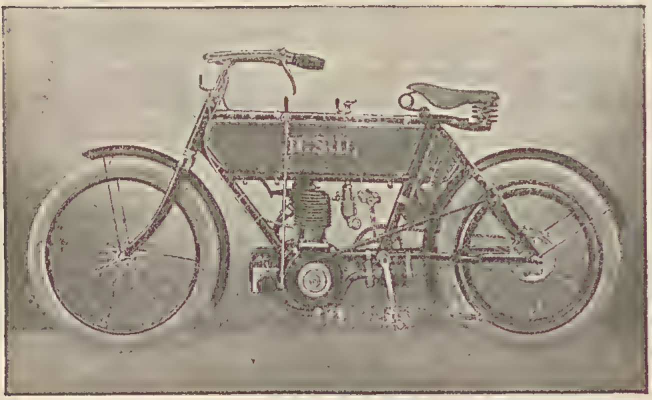
From time to time someone denies the value of science in agriculture, but the time has long since passed into oblivion when it was necessary to repel the assaults on scientific agriculture. While occasionally a man entirely ignorant of science may be a good farmer, no one can attain the highest success unless he understands the principles which underlie agriculture. He must know something of soils and fertilisers, plant and animal growth, nitrogen's place in agriculture, the nature of and changes which take place in milk, butter, cheese, etc. During the last 25 years it has been demonstrated over and over again that a thorough understanding of these general principles and their practical application are great factors in successful farming. We have an institution in this State—the Roseworthy Agricultural College—where these principles are taught thoroughly, and the record of the College shows that those students who have gone through the course of practical scientific agriculture, dairying, pig-breeding, etc., are to-day amongst the most successful of farmers in the State. On this subject a writer in a New South Wales exchange says:—

Notwithstanding all that has been said and written about the value of science in agriculture, there are many people who altogether ignore it. At the last Royal Show, in the section devoted to Government exhibits, an expert was imparting some scientific information to a number of country visitors. One of them contended that science was not essential to agriculture, and in support of this mentioned that the most successful farmer in a certain district did not know how to read or write. There is always an exception to prove the rule, and occasionally a man totally ignorant of science may be a successful farmer. There is no getting away from the fact, however, that present-day conditions render a knowledge of the principles that underlie agriculture essential to successful farming. During the past quarter of a century this has been demonstrated again and again. The farmer who cultivates must know something about soils and fertilisers, plant and animal growths, etc. The dairyman must understand the nature and changes which take place in milk, butter, cheese; and the orchardist, in the same way, needs to be posted in the scientific side of the business. A thorough knowledge of these principles and their practical application are great factors in sucsessful farming.

Hackney, how do we come by the word? From an old Spanish word, meaning an animal somewhat larger than a pony.

Giving Medicine to Horses.

The practice of giving medicine to horses by elevating the head and pouring it into the nostrils is a foolish method. Providing the medicine is of a non-irritating character, so as not to inflame the membrane of the nasal chambers, and providing, again, that the pouring is done through the left nostril, and again providing that the head is not elevated too high, so as to thoroughly open the epiglottis, then the liquid will go direct through the œsophagus (gullet) to the stomach. But when the remedy is a fiery liquid, like ginger or pepper tea, then the sensitive membrane of the nasal chamber is more or less irritated by the dose, and serious harm may follow. Should anyone administer medicine through the right nostril, there is always great danger of the horse being strangled, as the liquid arrives in the pharynx, and, as the horse does not swallow naturally, strangulation may follow when he breathes. The left nostril is in a line with the œsophagus (gullet), and when the head is elevated just at the right angle the liquid will run down all right. But raise the head too high, and the valve (epiglottis) that closes the end of the windpipe will be lifted, and the liquid will as readily run down the windpipe as the gullet. The practice is dangerous and, what is more, is unnecessary. With a drenching bit or even with a two-tined pitchfork an assistant can easily elevate the head of any horse sufficiently to pour medicine from a bottle down his throat easily. Let fools practise fool methods, and wise people strive to practise common sense methods in administering medicine to animals.



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This silo is designed to be constructed almost entirely of steel, barbed wire, and cement concrete. The standards or uprights are of 2 inches by 2 inches T section steel bars, tied horizontally with flat bars, locked to the uprights, and with barbed wire, secured to the uprights by strong wire ties The concrete should be of coarse sand and cement, in the proportion of 3 of sand to 1 of cement, and should be run into moulds in position. It is estimated that the rate of progress in construction would be 3 feet per day, so that nine or ten days would suffice to fill in the concrete when the framework is in position. The whole of the roof may be removed in sections quite easily, and replaced without trouble, thus enabling the structure to be completely filled before putting on the roof. When the concrete is once set the silo is indestructible, neither fire, weather, nor insects being able to make any impression on it. In districts where coarse sand is easily obtained it can be erected quite as cheaply as if of wood. On many farms a suitable position can be found on a slope of ground convenient to the homestead on which the silo could be erected, loaded from a wagon at the top, and emptied on the lower side, the concrete making this quite possible, when with timber it would be impossible.—Queensland Agricultural Journal.

The United States Bureau of Animal Industries has been enquiring into the presence of tuberculosis in various herds of cattle, and has published the following results :—Percentage Affected : Jerseys, 54 ; Aberdeen-Angus, 28 ; Ayrshire, 24 ; Shorthorn, 23 ; Red Poll, 7.

Gleanings.

Does a horse pull or push a cart? Sir Oliver Lodge says he really pushes it, because his head is put into a collar, and the motive power is gained by pushing.

If the destruction of weeds is done when they are small they are then out of the way before they can harm the crops and soil.

The medium pig, neither too big or too small, is the aim of the wise man who raises for market.

Wheat bran is good, and will warn off costiveness in sows; this is common when they are feverish.

The poor man's cow, as somebody has called the goat, shotld be a common object in small holdings. Goat's milk is said to be always free from tuberculosis, and rats will not keep company with goats. Two recommendations for the animal.

Depopulation? At a village near Exeter the wife of a farm labourer has just given birth to her twenty-second child. All the family are alive and doing exceedingly well.

It should be remembered that the lime when in its caustic or quick state, has the most power in producing chemical and physical changes in the soil.

The aim should be to get the lime into the soil in its active state, and have it thoroughly incorporated before it has had a chance to lose any of its active principles.

A litter of young pigs every six months allows the requisite sixteen weeks for gestation, nine weeks for suckling, and for a visit to the boar. This makes up the twenty-six weeks, and thus every half year the sow contributes a litter to the stock of the farm or breeder's animals.

It is reported that 15,000 wild horses in Nevada are to be destroyed in consequence of the injury they do to the young forests.

"Good wine needs no bush," but margarine and milk blended butter require all kinds of attractive names to catch the public.

A good sow should not be bred until she is reasonably matured, and generally the safe rule to follow is to let her be a year old when she farrows her first litter.

The kind of seed that will make the biggest yield should be selected from the hardiest fields, those producing the heaviest yields, one year with another, under ordinary conditions.

More work on the land will make more plant food available for the crop season.

A truck load of cattle with uniform style, size, and markings will outsell a mixed lot. It is the same with pigs—a truckload of even, good-quartered, compact, well-arched, broad-backed, deep bodied hogs will outsell any mixed mess of the decendants of the crossbreds scrubs.

Many people forget that the horn grows and expands, whilst the iron of the shoe does not, and this is the case more particularly with young horses.

Although pigs like to wallow in slush in warm weather, they require a dry sleeping place to keep them in good health, and, as they feel the cold acutely, it is absolutely necessary that they should be protected from cold and damp.

The man who is careless about his harness and who allows his horse to drive himself, will spoil any animal, and is as likely to end up by letting the horse down as not; but this observation must not be taken as suggesting that a driver should always be fidgeting and worrying his horse.

Supplement to the Australian Gardener, June, 1908.

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The Young Folks.

The Life Story of the Common Arum, or Cuckoo-Pint.

By John J. Ward, Author of 'Minute Marvels of Nature,' 'Peeps into Nature's Ways,' etc.

The beauties of Nature, the exquisite forms and colors of natural objects, may brighten man's path through life, yet this is only incidental to their real function—the interests of the real organism itself.

Even the green color of the grass has its specific function, and, likewise, every tiny hair or spot of color that accompanies a flower or appears on stem or leaf. When a flower secretes rich nectar or honey and sends forth sweet perfumes, at the same time developing showy petals to further advertise the fact that the nectar is there and ready for all the winged insects that care to come to the feast, it is really doing something entirely in its own interests. To put the matter briefly, the plant needs the help of the insect to convey its fertilising pollen from bloom to bloom to make its seeds fertile, and bribes it with nectar to gain this end. Beyond that point the plant's interest (if we may term it such) in the insect absolutely terminates.

Now, in our May rambles we are almost sure to find in the moist woodlands, or by the watery ditches, blooms of the curious wild arum, cuckoo-pint, wake-robin, lords-and-ladies, as you may like to call it. We shall be struck by the quaintness of their form and coloring, for the arum is one of the most curious plants in the British flora. However, before going into details regarding this extraordiuary floral structure, I want to take you back to the beginning of things, and show you how the plant started its career. But, first, I will let you into one little secret regarding the bloom itself.

When a bloom is found fully opened, it will be observed that it narrows off to form a kind of neck just below the central portion, and then swells out again, forming an oval-shaped sac Now, having obtained such a bloom, cut a tiny portion from the substance of the sac, so as to make a small hole. Then turn the hole towards the sunlight and watch what happens. Through the opening will come a tiny midge-fly, which at once takes to its wings and disappears from view. Its place, however, is immediately taken by another fly, and presently still others appear, until at last a veritable army of midge flies is trooping through the hole. It is rarely that one can find a fully-developed arum without its army of tiny midges within. How came these flies there, and what are they doing? These are questions I will endeavour to answer later; meanwhile, we have to learn something of the early history of the plant.

The arum plant as we know it may start life from a seed, but it more often develops after the manner of the cultivated potato, and, instead of producing a new plant, simply continues the growth of the old one by means of underground tubers. On a certain April 8 it developed roots below, and above budded out a single leaf. The rich stores of nourishment in the little tuber gave the plant a good start in life, and, as the roots developed below ground, growth went on apace above, and some eight or nine days later the leaf began to assume its permanent form. A little later still another leaf was formed to accompany it. By early May a third leaf had appeared, and, in addition, a curious central object that tapered to a sharp point.

The work of the three leaves was then to spread themselves out to their fullest extent to the sunlight, for they have the power of absorbing energy from the sun's rays; and this energy is largely utilised in the building processes of this all-important central object, which meanwhile was rapidly progressing. By May 16th it had become quite an important part of the plant, and was unfolding its structure to the light. Within was a curious, purple-colored, club-like organ, and the sheath or hood surrounding it was of a pale green color tinged also with purple. It was on May 19th that it reached its perfection.

What did all this mean? What was the purpose of this most quaint floral structure? No butterflies or moths were ever seen to visit this extraordinary-looking blossom; indeed, the whole plant looked weird and uncanny. Its glossy, dark green, sagitate leaves contrasted strongly with the pale-colored hood of the bloom, and against this stood out conspicuously the purple club; the whole plant, too, is very poisonous, and the odour from it, although not very powerful, is certainly not inviting. Still there are living things that know full well how to appreciate that mysterious blossom,

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for within the lower part of our bloom was a merry throng of tiny midge-flies, such as I have previously referred to, in the midst of a revel they dearly loved.

The particular little midge that patronises the arum in this country has no common name, but to distinguish it from other species of midge-flies I will give its entomological name, which is Psychoda phallænoides. The little insect is a near relative of the common gnat, and is familiar everywhere during the summer months. With wings closed it would about cover the space of a pin's head, and it is very commonly seen hopping about in a curious jerky fashion on windows of outhouses and similar places, but it is very difficult to catch. Concerning the life history of the species very little is known, yet it is certain that when arums are blooming these midges give little time to anything besides drunken orgies within their shelter. You have only to cut open a bloom at the narrow neck portion and look down to the lower part to see the helpless insects lying in heaps, all more or less intoxicated—intoxicated from over-indulgence in arum pollen. Indeed, they are often almost buried in the yellow dust, their hairy feelers, legs, wings, and bodies so thickly covered with it that the insect looks twice its natural size when it leaves the bloom. The temperature, too, inside the enclosed area where the flies are found is much above that of the external atmosphere, often from 10 to 20 degrees higher.

The arum's scheme for entrapping these little flies is a most artful one, and more like the ingenious work of a thinking animal than the blind instinct of a mindless plant.

In the first place, the arum bloom is not a flower, but what the botanist terms an inflorescence. That is to say, it is a branch of flowers; just as a shoot of foxgloves would not be a flower, but an inflorescene, or branch of flowers. Now, I must here point out that a perfect or complete flower consists of four whorls—the green sepals, the colored petals, the stamens which produce the fertilizing pollen, and the central pistil, to the surface of which the pollen is conveyed in the process of fertilization. But a flower need not necessarily possess all these parts; almost any whorl may be missing. However, the stamens and pistil are essential, although they need not always be in the same flower—*i.e.*, one flower may have sepals, petals, and pistil, but no stamens, when it becomes a female flower. In such cases the pollen is generally conveyed from one flower to another by means of insects that visit them alternately. The simplest and most primitive kind of flower consists of a single pistil that produces a seed, or a single pollen-producing stamen, without any sepals or petals around it, and this is what we have in the case of the arum. The arum possesses many flowers, botanically speaking, but it can scarcely be said to possess anything worthy of the name in its popular acceptation, although the inflorescence as a whole partly atones for its delinquencies.

At the lower part of the purple club, in the area where the midges are entrapped, there are three kinds of small bodies. Lowest of all are pale-colored roundish objects; each of these consists of a single pistil containing an embryo seed. Above these are some smaller, curious, purple-colored knobs which, when mature, burst open and shed quantities of yellow pollen dust. From what I have previously said, it is plain then that we have here two groups of the simplest of flowers, just a single stamen, or a single pistil, without any other floral parts. Above these groups of simple male and female flowers we find some other bodies shaped like the lower female flowers, but from their surfaces appear long bristles which stand out away from the axis and point downwards. These objects are really female flowers modified to serve another purpose in the plant's economy—and of this more anon.

Now that we understand the various parts that constitute the quaint floral structure of the arum, we may proceed to see what connection they have with the tiny midges that so love to visit them.

The purple club is the sign-post that attracts the midges, for it is, of course, quite a conspicuous object as it stands against the pale green hood that encircles it. So presently the arum-seeking flies come along and espy the familiar sign-post. Not a moment is lost. They steer quickly for it and alight upon it, and gleefully descend until they reach the narrow neck portion, where they meet the bristly flowers. These latter, with their bristles pointing downwards, prove no obstacle to the midges, so they travel down to the base of the flower.

Many of the midges have just come from other arum blooms in the near neighborhood, and about their wings, legs, and bodies they carry traces of their previous feastings in the form of minute pollen grains. But when they reach this particular arum they meet with disappointment, for the arum contrives to induce the midges to enter the bloom well before its pollen is mature. So when the insects reach the base of the bloom and find no pollen there, they have plenty of time to sober down and, perhaps, repent the foolishness of their past orgy. In fact, this period of fasting after one feast often lasts so long that they become really hungry. Of course, you will ask: Why, then, do not the flies leave the bloom? They undoubtedly would if they could, and they travel up and down the central axis many times doubtless with with that intention; but when they reach the bristles in the narrowed neck of the bloom, they find that, although they could travel down them freely enough yet they cannot return the same way, for the bristles point downwards and make a perfect barrier against their leaving. Indeed, they are prisoners until the arum chooses to release them. There is often ample room for such tiny flies to travel up the sides of the hood, and so miss the bristles, but they make no attempt to escape in this manner; it may be that the hood is too steep and smooth for them to climb.

So the midges crawl about within in durance vile and keep increasing in numbers as new visitors arrive. Meanwhile the lower female flowers arrive at maturity, and the top of each pistil develops a sticky stigma. Amongst these gummy surfaces the tiny flies wander in search of the pollen they need, and from theis legs and bodies are rubbed more or less every pollen grain that they brought with them from the arums they have previously visited. And here lies the essence of the whole scheme. Each pistil in this manner eventually gets cross-fertilized with pollen from a neighboring plant. Of course, the arum will eventuolly develop pollen of its own, but cross-fertilization results in stronger offrpring

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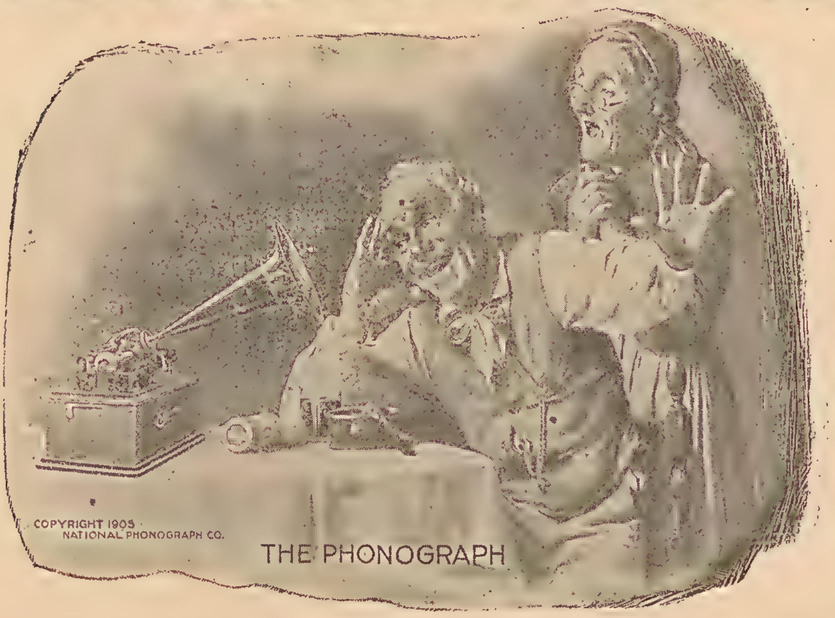

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than those produced by self-fertilization and so the plant lays itself out to that end.

After a time every flower is fertilised, the stigmas begin to shrivel and dry, and then the hungry insects, now almost on the point of starvation, get their reward. Yellow pollen begins to shower down upon them, for the male flowers are now arriving at maturity The pollen cannot influence the stigmas of the female flowers, for these have now lost their sensitive nature. So the hungry insects gorge themselves until they can hardly crawl, and consequently there they lie in heaps; but still the pollen continues to fall upon them, literally burying them amidst it.

There comes a time of respite, however, later on, when the flies begin to feel that they have had about enough of it and to realise that a little fresh air would be an excellent tonic. So, covered with pollen, they ascend the central axis preparatory to leaving the bloom. The barrier bristles now no longer stop the way, for the plant has no further use for the little insects' company; the latter have done their work and received their due payment, therefore they are now allowed their liberty. So, on reaching the purple club, the insect pushes off into space. The air, together with its flight, refreshes it wonderfully, so much so that probably before it has travelled many yards it becomes fascinated by a most charming purple club standing out fresh and cool against an enfolding pale green sheath. Thus it is enticed once more into another arum bloom, to be prisoner for a few days; and while there it will have plenty of time to clean up its pollen-laden limbs and rub the grains against the sticky stigmas of the flowers within. So the whole process is once more repeated.

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After the midges have departed with their loads of pollen, no further insect visitors arrive. In fact, the plant at once begins to take in the sign-post. Not even the most giddy of midge-flies would ever attempt to visit an arum at this stage. The purple club has shrivelled away and turned down right to the base of the group of male flowers, and likewise the hood that gave the club such prominence also now cuts a sorry figure. Indeed, at first you might think that the whole thing was dead. However, the leaves are still working to build up the central structure.

By August the turn of the leaves to shrivel had arrived, for they had done their work, and the memorial of that work was conspicuous enough. The shrivelled hood is seen still clinging to the structure, but bursting from it is a cluster of plump green berries, which immediately they become exposed to the light turn a bright scarlet color. And so the hood falls away and exposes the berries which stand on their stout stem looking a most conspicuous patch of bril-

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liant red. Why this bold front? Has the arum some other scheme on hand?

Yes; the arum once more needs service from the animal world. Many plants not only bribe insects to assist in fertilizing their flowers, but also induce larger animals to disseminate their seeds. The method adopted is generally that of a juicy, sweet pulp around the hard seed, so that the animal shall carry off the fruit and cast away the stone, or seed, in distant places where it may germinate. In the case of the arum we have this principle carried out exactly. Each of those tiny pistils has now become a red juicy berry containing a hard seed, which boldly invites animals to feast upon it. But the berries are extremely poisonous, and therefore the whole theory is apparently contradictory. The fruit is made attractive and inviting to tempt the appetite, but then it is made poisonous to prevent it from being eaten. Surely there is something amiss here!

We have to remember, however, the fact that birds are so constituted that what is poisonous to man and other animals is not always so to them. The thrush, for example, devours the arum berries with impunity, but at the same time there are many smaller birds and larger animals, not to mention man, to whom these same berries would probably prove fatal. The fact very likely is that the arum specially caters for birds of the thrush class, that consume its fruit and convey its seeds far and wide, and not for the nibbling animals which might do the seeds an injury. As the plant has slowly evolved its poisonous properties which prevent undesirable animals from munching its seeds, the thrushes, which best serve the purpose of distribution, have kept even pace in the development of their power to resist the poison; like confirmed opium-eaters, they may now consume quantities of poison that would mean death to others.

Let us suppose, however, that a small animal or bird ate such berries and thereby lost its life, the decaying remains would offer advantages to the developing plant after the seed had germinated. By the law of hereditary, too, the succeeding generation of arums, on account of this advantage, would develop still stronger poison in their berries.

Here follows a short story of a scientific experiment.

A silly scientist imported a few years ago a gipsy moth into America.

It escaped, and feeling itself in the land of freedom laid a supply of eggs, no doubt in the prolific manner of moths.

The descendants of that moth multiplied exceedingly and scattered themselves through the land.

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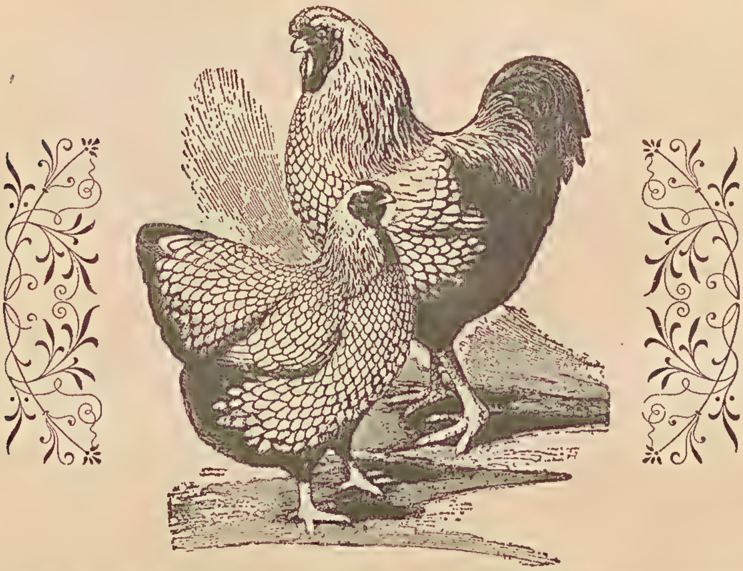

Diseases of Fowls.

(Continued from last issue).

CHICKENPOX OR WARTS.

I have already said that the disease is experienced in a mild form only in America. That, however, is speaking generally, there being some States where it is severe, as the following extract, contributed to an American newspaper, shows:—

Of all the poultry diseases the fancier has to contend with chicken-pox in its malignant form takes the lead. I have been in the poultry business for the past twenty years, and it is wonderful to read all the rot and contradictory theories that are written on the subject. Some go so far as to claim it a local disease, caused by mosquito bites; others claim it dry, roup, etc. While the etiology of chicken pox is still shrouded in mystery, there is no doubt that it is of microbe origin There are three distinct stages of the disease—the eruptive, that of desiccation, and that of desquamation. It is sometimes discrete (mild form), when the pustules remain separated from each other confluent (or sveere form), when the pustules unite

The disease is both contagious and infectious. Sympoms: a vesiculo-pustula eruptions of the comb, face and wattles; colour, yellowish white, and becoming pustular as they devlop, ending in a dry scab; when these scabs are removed they resemble a bunch of spiles set in the flesh and breed freely. In the confluent form the eyes are closed, and a yellow fungus growth forms in the corner and under the lids of the eyes. From the pressure of this fungus growth on the eye ball we often find the eyeball ruptured and destroyed. Whenever we have a case of the confluent form we do as George Washington did – we use the hatchet.

As to the treatment, I am a great believer in the old saying: “ An ounce of prevention is worth all the cures.’ This is my treatment—prevention; hence for five years (although my neighbours' poultry have had the disease) I have not had a single case of chicken-pox, or sore head, in my flocks My mode of prevention is this: thoroughly clean everything in the yard, houses &c., and sprinkle with carbolated water (one teaspoonful of acid to 1 gall of water); give for drinking water two tablespoonsful of sulphate of magnesia (Epson salts) to one gall of water; place this water (and no other) before your chicks twice a week during the summer months. Use this treatment, and a case of sore head will be a rare occurrence in your yards.

If you have not used this treatment and should have the disease in your flock a remedy we have used successfully is to bathe the head of the fowl in warm water and apply to all sores a coat of pine tar, do not try to pull off the scab; let them drop off. Many applications have been suggested; but I would advise that in all confluent cases—that is, where the pustules are united and form a crust over the face and eyes—I used the hatchet.

The above recommendations for cleanliness in the poultry yards as a preventive of chicken-pox may have been effective in the instance quoted, but if so the disease must have been of a different form from that experienced here, where fanciers' yards which have been models of cleanliness have had the disease in the most destructive form Bathing the head in

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pine tar or aught else would have no curative effect in many cases here. Outward applications of vaseline, oil or other greasy material are certainly useful in the way of allaying painfulness of the sores and reducing irritation, but the disease has to go through its various stages, terminating in the scabs dropping off. Consequently we have to fall back on the remedies suggested by Lewis Wright, Mrs Rawson, and others: small doses of magnesia and sulphur, with strengthening food throughout the period, with an occasienal application of oil, vaseline, etc. Should the scabs become prematurely removed, thus leaving a raw looking sore, one of the best healing ointments can be prepared as follows:—

Powdered oxide of zinc, 80 grains
Glycerine, 1 drachm
Lanolin, 1 drachm
Lard, 6 drachm.

Melt the lard and lanolin together, add the glycerine, and stir in the zinc until the ointment sets. The most simple and effective way to apply the ointnent is with the finger.

Before leaving the subject it should be mentioned that there are some poultry keepers who attribute the disease to mosquitoes. The best answer to the above at time of writing, is that mosquitoes are as plentiful as they can be but there is no chicken-pox. There, however, is no doubt that these irritating and disease carrying insects interfere in delaying the course of the disease, though in no way responsible for its outbreak.

(To be contínted)

Beware of Carbolic Acid.

A medical man gives a decided warning against the free use of carbolic acid on poultry. In reply to the query, Would you please explain why some people claim that they have had great success in curing diarrhœa in their chicks by the use of carbolic acid, when others claim the contrary? he seys:—

As to the wonderful properties of carbolic acid I shall herewith give for your own benefit and that of all readers an extract from the price crowned work on "War Surgery," by Professor Esmarch, M. D., the world-famed surgeon and professor of surgery, a surgeon genersl of the first class in the German army, and a member of most of all the important scientific bodies of the globe. He says:—

Carbolic acid is a very effective antisecptic. A watery solution of 1·100 stops upon longer contact the development of microbes, the germ development becomes entirely inhibited, though only after a twenty four hour's contact with a concentrated solution of 5·100. Solutions in oil or alcohol are, according to Professor Koch without any antiseptic effect. But carbolic acid is very poisonous, and that not on internal use only For even when applied externally in the form of washes compresses, etc, to wounds. abrasions of skin, and even the normal skin, it is easily absorbed into the system and does (particularly in children, but also in those adults who are suffering from cachetic conditions, anæmia, kidney troubler etc.) cause quite often very severe symptoms of blood poisoning acute (collapse), as well

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as disturbance of digestion, vomiting, maramus.

It also irritates the the skin, particularly when used moist, and causes erythema and oczema, often combined with high fever, and strong solutions irritate the surface of wounds to such an extent as to cause severe secretions, yea, even as Lister called it, antiseptic putrefaction—gangrene!

The professor adds: "Carbolic acid is, therefore, much less used now than it was in the days of Lister, when it dominated as an antiseptic."

This was written by one of the foremost authorities in the medical world in 1885, has been recognised and acknowledged as true by others, but alas, now after a lapse of twenty years, carbolic acid is still the standby of profession and laity?

We have treated this question at length because the belief in the healing power of carbolic acid is so general among the people, and its true nature so little known We must warn our friends of its use, to portect them, their families and fowls, which have to stand so much maltreatment—Exchange.

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The Orchard.

Treatment of Orange-trees.

By G. Quinn.

Owing to the continued dry weather, growers of oranges need to exercise considerable care in the treatment of these trees, as the ground has to a great extent been dried out, and scarcely contains sufficient water to enable the trees to carry forward their crop. One who has been in the habit of ettending to deciduous trees, which are now going to rest, and are better allowed to stand slightly dry at the roots, may be apt to overlook the fact that the citrus-tree presents opposite characteristics as regards the season when it requires careful attention and abundance of moisture. Citrus trees are approaching the time when they must withstand the greatest strain, as the fruits approach their full size, and consequently no check in the supply of water at the roots should be allowed to take place.

Planting of deciduous trees will begin now the rains have come. Thie is no doubt that in almost every locality the best time to transplant young trees is while warmth still remains in the soil. This is irrespective of whether the tree has shed its foliage or not. When placed into warm soil, while the top goes to rest and sheds the leaves, if they still remain at the time of transplanting, the root system starts afresh, and develops a fine lot of young fibres before the temperature of the grouud falls too low to stimulate such activity. With the return of warmth in the spring the tree stands in almost the same state as one that has not been shifted and the roots are in a positon to begin immediate absorption from the soil, and thus replace the moisture which is thrown off, as soon as transpiration begins from the young leaves. On the other hand, a tree shifted into its permanent place in the depth of winter, when the ground is cold remains with a damaged root system, not in balance with the upper part of the plant, and the first stages of growth must consequently be performed at the expense of the stored up energy, which cannot be replaced untill new roots have been formed. When transplanting young trees the roots will be to a certain extent lacerated and this necessitates the trimming of the damaged parts. If the trees have been exposed and the roots become dry, most of the fibres will have perished and where this has occurred, the fibres should be trimmed back to more solid roots, which will furnish the fresh growth The hole for a young tree should be large enough to allow the roots to be spread out giving them a downward tendency at the extremities. Good well pulverized soil should be placed in contact with the roots and each tie of secondary roots which emerges from the primary root should be spread out so as to secure it in a natural position when the hole is filled with soil. No fresh manure or unrotted grass or weens should be thown into direct contact with the roots, and if any artificial mnnure be used, it should be thoroughly mixed with the soil, and not allowed to touch the roots directly. Fine bone dust is a much safer manure to use with young trees than the more active forms, such as superphosphate. It is not desirable to trim or prune young trees until they haue been set out in the orchard; in fact there is nothing to be gained, and possibly much to be lost, in shaping of the future tree, by leaving the first pruning till early springtime.

The opinion has often been expressed that varieties of fruit which may in the

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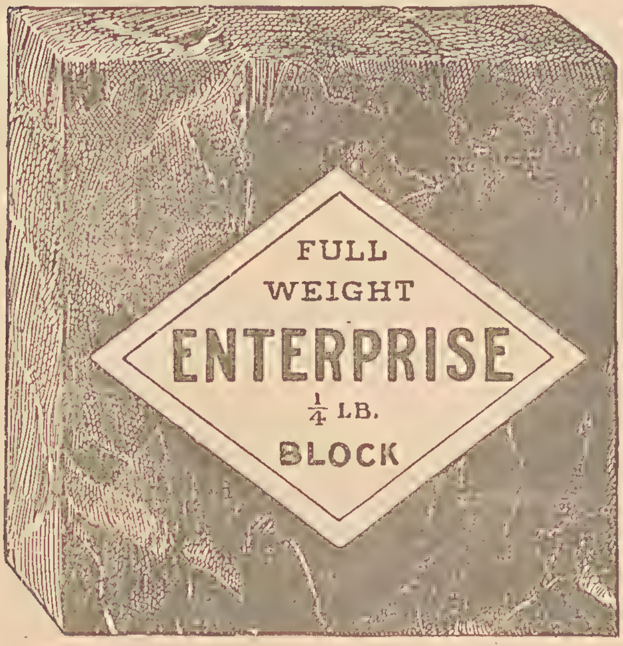

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future make a name for South Australia in other markets will be mainly evolved by local conditions, and as the result of accident or design in the raising of seedlings. We have already such local apples as Dun's Seedlings, Rokewood, and Granney Smith, which have proved of exceptional value. During the last few years a resident of Mylor (Mr. J. A. Jamison) has been attempting to raise seedling apples. In a note which accompanied some samples which he recently submitted to Mr. Quinn, Mr Jamieson states that his object is to get a hardy apple maturing in time for early shipment Amongst the six or even varieties submitted were several possessing considerable merit, mainly in the direction of long-keeping qualities. One in particular promises to prove valuable in this direction. It appears to be a cross between Rome beauty and Stone Pippin; but, while apparently possessing the keeping qualities of the latter, it has certainly a better flavour. The other samples were past their condition, but one or two had a good appearance, and may prove valuable in the direction which the grower is following. Accompanying the consignment was a seedling pear, which resembles the Easter Beurre, but possesses all the flaor and quality of a good Bergamot, ripening about the same time as Gansel's Bergamot This promises to be useful for filling a gap in the local market, and it is hoped that Mr Jamieson will persevere in his praiseworthy efforts.

Arsenate of Lead Spraying.

Experiments within the past two years and more have demonstrated that arsenate of lead is a better insecr destroyer when used on trees in leaf than any other article that has been employed. The reason is that it sticks to the foliage better, and does not wash off in rains as other articles do. This adhesive quality is very much in its favor, saving repeated sprayings which have been found necessary when paris green and other substances have been used. It has been found that the ready made arsenate of lead employed at the rate of one pound to fifty gallons of water is the right proportions to use.

As is well known to those interested in the subject, the worm of the codlin moth enters at the apex of the embryo apple just as the flowers fade, developing from eggs which are laid in the tender leaves just as they unfold. No time is to be lost in having the mixture ready to spray just as flowers fade, for within a very short time thereafter the worm will have entered the tiny apple, and the spraying must be done before the worm moves. If done at the right time, practically every worm will be killed, and this would end

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the business of spraying for the season, for it is those that escape from the first brood that parent what is called the second crop. The worms that reach the ground from the fallen apples go into the soil under the trees, and passing through their stages to the moth form attack the apple again, except the last brood of worms, which remain in the ground all winter, emerging at the time the foliage is appearing on the apple trees.

More than usual care is required when spraying for this moth. It is different spraying a tree when in leaf from one bare of foliage. In the case of the apple the spray must enter the apex of the flowers as well as reach all parts of the foliage. There must be force enough to the stream to cause it to reach higher than the tree that it may reach the upper part of both leaf and flower as it decends. A nozzle with a bend to it is sometimes used, as it throws the spray downward with some force, reaching more inscets than side streams do.

Not should one spray his trees but every effort should be put forth to persuade neighbours to treat their trees as well, to prevent moths flying from their trees to his, which often happens, though it is believed that the codlin moth does not fly a great distance.

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Our Mr. Gurr visits Country Districts every three months, North and South.

To Correspondents.

Egg Producer.—Yes the weather has a great deal to do with your fowls in their egg laying. Extremes in weather affect fowls just as much as human beings. The ideal condition is a uniform mild weather. Study the housing and feeding of your fowls as a preventive against extreme weathers, if you wish to have a regular supply of eggs.

Orchard.—June is the month for pruning. With young trees that have made good growth, say after three years, do not spare the knife to get your trees into good shape, leaving the centre well open. The fruit requires plenty of room and plenty of light.

Roses.—This is the time to plant roses. Lick your old rose bushes into shape. They can be lifted and planted out if necessary. Get a few new varieties.

Disappointed.—The partial failure of your potatoes is possibly due to planting the same ground and the same seed too often. They have both got stale. Try new seed and new soil. Put in peas or beans in the old land, and dig in the old stalks directly after the crop is taken off.

Tired.—We can easily understand your getting tired of trying to kill out soursobs. Lots of people have had similar experience. The only way is to keep on turning up the roots and bulbs to the sun.

Weeding.—There are lots of ways of killing weeds. The best way that we know of is to start on them when they are young.

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BY CONSULTING
H. MARGULES,
SIGHT SPECIALIST
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REMOVED TO
22 NORTH TERRACE,
Late Dr. Cawley's.

There are three mistakes frequently made in pig-raising.

It is a mistake to forget that the pig is a grazing animal.

It is a mistake to feed pigs of all sizes together, wherever the small ones are at a disadvantage.

It is a mistake not to grow pigs rapidly from birth to market. They should gain every pound possible on the way.

There is a regular trade in horseflesh in Paris, and it is said that at the next fat stock show in the city there will be a class for 'fat horses.'

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